

**STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION**

**LIGHTING EFFICIENCY ADVISORY GROUP (LEAGue)
MEETING**

**Monday
December 16, 1996
10:11 a.m.**

**California Energy Commission
1516 Ninth Street
Hearing Room A
Sacramento, California**

REPORTED BY:

A. FLYNN

STAFF PRESENT
(Alphabetically Listed)

FRED BERRYMAN

ROSS DETER

DAVID JONES

JOHN SUGAR

ALSO PRESENT
(Alphabetically Listed)

LARRY AYERS, Electric Power Research Institute and American Lighting
Association

BERNIE BAUER, Association of Professional Energy Managers

JIM BENYA, Illuminating Engineering Society of North America

JIM COLE, California Institute for Energy Efficiency

WILLIAM F. DAIBER, San Diego Gas and Electric Company

CHARLES ELEY, Eley Associates

SY GERBER, American Lighting Association

NORMAN C. GRIMSHAW, Advance Transformer Company, National Electrical
Manufacturer's Association

JEANNINE FISCHER, Design+

LISA HESCHONG, Heschong Mahone Group

JOHN HILL, John Hill & Associates, Association of Energy Engineers

WARREN KARP, American Lighting Association

BRIAN LIEBEL, Design+

ALSO PRESENT
(Alphabetically Listed, continued)

DOUG MAHONE, Heschong Mahone Group

PETER MILLER, Natural Resources Defense Council

MIKE NEILS, M. Neils Engineering, Inc.

RICHARD OLSON, retired

MARION RADER, Marion Claire

FRANCIS RUBENSTEIN, Lawrence Berkeley National Laboratory,
United States Department of Energy

JACK E. SALES, International Dark-Sky Foundation

PETER SCHWARTZ, Pacific Gas & Electric Company

SHELLI SEDLAK-MEJIA, Southern California Edison

MICHAEL SIMINOVICH, Lawrence Berkeley National Laboratory

R. FRANK SMITH, California State Polytechnic University, Pomona

GALE SPENCER, Illuminating Engineering Society of North America

THOMAS TOLEN, Design+

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PROCEEDINGS

CHAIRPERSON GRIMSHAW: Can we please come to order and start the tape rolling? Welcome, everyone.

Very quickly, to start off, I'd like to go around the room and have everybody introduce themselves. And if you are a guest to the LEAGue, please identify yourself as we go around. And we will welcome you as we do that.

My name is Norm Grimshaw. I will be facilitating the meeting. I am NEMA representative in the ballast area.

To my right, --

MR. BERRYMAN: This is the right. I'm Fred Berryman with the California Energy Commission Lighting Program.

MR. JONES: Good morning, everyone. I'm David Jones, California Energy Commission.

MR. DAIBER: Bill Daiber, San Diego Gas & Electric.

MR. SUGAR: John Sugar, California Energy Commission.

MR. BENYA: Jim Benya, Pacific Light Works, representing IESNA.

MR. BAUER: Bernie Bauer, Integrating Lighting, representative for APEM.

MR. AYERS: I'm Larry Ayers with the Electric Power Research Institute, assigned rep for ALA.

MR. KARP: Warren Karp, ALA.

MR. COLE: Jim Cole, California Institute for Energy Efficiency.

MR. HILL: John Hill, John Hill and Associates, representing AEE.

CHAIRPERSON GRIMSHAW: Frank.

MR. SMITH: Frank Smith, Cal Poly University.

MR. RUBENSTEIN: Francis Rubenstein, Lawrence Berkeley National Lab, representing U.S. DOE.

[Audience Members identify themselves.]

DR. SIMINOVICH: Michael Siminovich, Lawrence Berkeley Lab.

CHAIRPERSON GRIMSHAW: Charles.

MR. ELEY: Charles Eley, Eley Associates.

MR. ANDERSON: Brian Anderson, California Energy.

MS. RADER: Marion Rader, Marion Claire.

CHAIRPERSON GRIMSHAW: Thank you very much.

John, you said you wanted to talk about some administrative things.

MR. SUGAR: Indeed, I did. We've set this up with as many chairs as we can, given the number of tables we have in the room. I have been warned by the court reporter that when we put a fifth table in here it is often difficult for him to see and hear.

I assured him that this group was not going to cause that kind of problem. And as a result he allowed me to put in the fifth table, which allows three more seats. So as we go along, if you would please be careful to use a microphone when you speak.

If you want to have a whispered side discussion, please do it away from the table. I won't get in trouble for having put in the extra table, and we can leave it in for the rest of the day.

Thank you.

CHAIRPERSON GRIMSHAW: Any comments on the Agenda for the day? Anything that you would like to add or rearrange? Any time constraints that we need to address early on?

Peter Schwartz of PG&E just walked in. Welcome.

MR. SCHWARTZ: Thank you.

CHAIRPERSON GRIMSHAW: Hearing none, we will proceed with the Agenda.

Would you like to say anything, Fred?

MR. BERRYMAN: Other than this morning, we're going to be looking

at the completion of the work that John Hill has been leading on our Marketing and History section, the Position Paper that the LEAGue has put together on that.

And then we'll be going into recommendations that you may have for entries in the Interim Report to the Legislature that's due out here in a couple of weeks. And most of the time has been allotted for that discussion.

And I'm very anxious to see comments from this group that will constitute good information on where we are, where we're going and what the potential may be from this report as it gets finally completed in the early part of next year.

So I'm optimistic, looking at those of you that are here, that we'll be getting very good input and making the job very easy for us to put the final -- or the Interim Report into a form that the Commissioner will be happy to send to the Legislature.

So I'm highly dependant on those of you that have made the trip here. And I appreciate Monday morning meetings are sometimes the more difficult to get to, but I do appreciate your being here. Thank you.

CHAIRPERSON GRIMSHAW: Anything else?

I'm going to give it to John Hill, if you don't have something else.

MR. BERRYMAN: Well, actually something that has distracted me a bit over the last several weeks and culminated in John Sugar allowing me to go to a retirement training class that was held in San Francisco just over a week ago. And they showed me how I could do it. And --

[Laughter.]

MR. SUGAR: I made a mistake.

MR. BERRYMAN: It is with very mixed feelings that I have initiated the paperwork. I went to lunch at the Pers [phonetic] Building. They have a nice cafeteria. And stopped in to pick up some forms. And at that point they said, "Why don't you fill them out now?"

And I did some thinking and filled them out. So because of some

financial constraints and the way they figure their numbers, it does make sense for me to retire before the end of 1996.

I do not intend to, depending on what people think about me, drop all involvement with lighting or the things I've cared about in energy efficiency and lighting. But in the formal fashion of getting a paycheck from the Energy Commission, they have a great vacation plan. And they allow you to go into that provided you don't come in and harass the management as I've done over the years.

So I have to promise to be good and not come in every day. And I will be interested, very interested in the results of the activity here. I realize the job isn't finished. It hasn't been for the 19 years I've been here. And I see a lot of opportunity for cooperative partnerships between the Energy Commission and business, educational fields, people who are in the area of certification.

That's one of the very strong hopes that I have, is that instead of unconsciously incompetent people in lighting, that the public will be able to deal with people who either are consciously incompetent or competent to do the work.

And if there's anything that comes out of the leadership that has been shown here by -- and originally the ALPAC and now the Lighting Efficiency Advisory Group -- it is that it has called attention to these things.

And my feeling is that it's been the focal point of things nationally. That you people, the advisors that we've had have taken the issue seriously and felt that solutions can be found that aren't necessarily adversarially, even in the area of regulations.

Bernie is here and was working with the California Retailer's Association during a period of time when things were quite acrimonious. I mean display lighting definitely wasn't something that could possibly be helped by regulation.

And we reached a point in those proceedings where I fell out of my chair in this room with a statement from the California Retailer's Association that there

was a good standard and a cooperative program had been reached.

I think there's tremendous compliments due to everyone that has been a part of the Advanced Lighting Professional Advisory Group and now the Lighting Efficiency Advisory Group. And I encourage those that are here and those that are not here to keep it up. It keeps people like myself, who are limited in time and capacity in both hours and sometimes mentally, it really does make the difference. And the formula here has worked.

The opportunity that the California Energy Commission has given me has given me tremendous recognition that I feel should be shared with all of you. So, yeah, I guess I had something to say.

And, again, it's with considerable regret that I won't be able to capture this much time in the future. But I certainly thank all of you. And it's a very -- I mean if this course had been available earlier, I would have had more time before New Year's Eve. But, as it is, I do have some plans for January that involve going to wonderful spots like Seattle and Albuquerque and places where I have some family that I haven't seen.

So, again, thank you. And we'll see what happens. I'm looking forward to a good meeting.

[Applause.]

MR. BERRYMAN: Now I feel better. I worried all weekend about saying anything today.

CHAIRPERSON GRIMSHAW: I worried all weekend about what I was going to say after you did, too.

I've known Fred since about 1962, '63.

MR. BERRYMAN: It was January of '64.

CHAIRPERSON GRIMSHAW: Sixty-four? We both worked at the ballast department for General Electric at the time. And I really don't like the idea of seeing that road come to an end.

Would anybody like to say anything?

MR. BAUER: I would. Bernie Bauer.

I certainly want to wish Fred all the thrills and excitement of retirement, but I see a positive in this all. And that is that Fred has been an active member of the IES Regional Energy Committee. And it has been politically inappropriate for Fred to directly represent us in many cases before the Energy Commission since he was an employee.

Now that he's retired, I see --

[Laughter.]

MR. BAUER: -- a great role for Fred to be continually active on our Committee and being one of the leaders in advising this Commission. So they've gotten out of paying him a weekly check, but I don't think they've gotten away from seeing him.

MR. BERRYMAN: Thank you.

MR. GERBER: Fred, we have been on two sides of the table. Sometimes you on one side, sometimes me on the other. And I think it goes back from the very first day that you became the Commissioner.

MR. BERRYMAN: Well, if I was Commissioner, I would stay.

[Laughter.]

MR. GERBER: I think we've gone through a lot. We've gone through especially with the recessed and the tract. And we've seen some pretty rough days for industry. And I appreciate, I think industry appreciates your fairness.

And even though I think we do have discussions, not arguments, and we have managed to solve an awful lot of problems for business and for energy.

And we're going to miss you.

MR. BERRYMAN: Thank you.

MR. HILL: Fred, I've known you since you used to run around with GE lamps and GE ballast in your hand. We've had a lot of neat experiences like going out in the hinterlands and putting on training sessions for all the schools in the far reaches of California.

And it's been a real pleasure to work with you and to have known you socially. And I'm sure that, with your background and experience, this is not the end of our association.

Thanks, Fred.

MR. SMITH: Frank Smith of Cal Poly University.

Fred, on behalf of the University I'd like to thank you for all the efforts you've put in to help establish the lighting program at Cal Poly. And without your input and the Energy Commission's, I don't think we would have a program down there today if it weren't for the efforts that you've put in. So thank you very much, Fred.

MR. BERRYMAN: Thanks, Frank.

CHAIRPERSON GRIMSHAW: Mike Neils walked in after the introduction. Mike was the chair of the ALPAC for virtually its entire existence. And I think he would agree with me that the ALPAC never would have existed without Fred's encouragement and his foresight, his guidance to the industry.

MR. NEILS: Are you asking for a comment?

CHAIRPERSON GRIMSHAW: I would appreciate it, yes.

MR. NEILS: Well, a lot of people don't realize this, but there was a report that came out of the Energy Commission in the late '70s. And it was done by a contractor out of St. Louis, Rafzin Barazini [phonetic]. And it's buried somewhere in the annals of the Energy Commission, but really that was the precursor to the ALPAC. And Fred was the guy that drove that contract.

And he said that the Energy Commission never really got any more value out of one single contract than that particular one. And I think he's really right because really they did a lot to stimulate a number of different organizations to look at efficiency and how efficiency can really benefit the marketplace. And regulations is not really the thing that ever drove Fred's activities. It was the bane of his existence here, I think, really. He hated it as much as all of us hated the idea of having to put some kind of a number on what people were doing out there.

But efficiency and the ability to drive the market with more efficient products was always number one in Fred's activities in terms of the technical thing. But I think primarily it was the relationships that he was able to establish in the industry that was the strength of what he did here. Because he was able to get people like us to come and sit at the table, even though we didn't have the time to do it necessarily, but he was able to convince us it was important.

And then, at the same time, say once he got us here that it was important for the Energy Commission to maintain that relationship, was a marvelous, artful effort in creating some kind of industry partnership with the Energy Commission before that was a buzz word.

So I've benefitted tremendously from the relationship I've had with Fred over the years and the stories that we've been able to create and talk about. And I'll never forget it. And I appreciate the opportunity and thank you, Fred, for doing all this good work.

MR. BERRYMAN: Thanks, Mike.

And, Mike, I stretched him beyond his available limits of available time or almost patience with the things that I would bring to him. I would call him up and say, "Mike, we've got to spend some time on working up an agenda for the next meeting. We've got -- I see these problems."

And he was a super sounding board. He made things that were somewhat confused thoughts in my mind come out and look like a very organized way of going at something. And Mike was a master at what he does. And I very much appreciate his leadership.

CHAIRPERSON GRIMSHAW: Well, this just lays the groundwork for us today because we've got a lot of work to do. We need to get this interim report hammered out today. And there are a couple of white papers that need to be hammered out. And so I think we better move forward, and we'll save a few accolades for later for Fred.

John, would you like to take over and talk about the Marketing Report,

History Report?

MR. HILL: Yes. Norm, what has happened since the last meeting is that I received a phone call of support from Bernie Mezger. I received some information from Jim Cole. And I received some information from Peter Bleasby.

And these informations are included now in the summation report, but this is in no way even a draft copy of a white paper report, and should be finished for the Marketing and History and *Advance Guidelines* Committee.

CHAIRPERSON GRIMSHAW: What are your recommendations?

MR. HILL: Well, again, that we have a committee that would actually work on the production of an interim and final Report as rapidly as possible.

CHAIRPERSON GRIMSHAW: Frank, you're the only other member of that Committee that's here today.

MR. SMITH: I agree with John. The Committee's really been lax in what we've been trying to put together. We're really behind schedule from the other Committees. And we appreciate the input from the other -- from industry that's been input into. And I know Cal Poly's been lax, especially myself because some of the material that's in there, I'm not that familiar with it, like lamp history, for example.

I think John and I really need to get to work together and work closely. I guess maybe I've got some spare time between now and the first of the year. Maybe John and I can get together. I'm off now until January 6th. So if John can guide me in what he'd like me to do. And then in the next few weeks, I can certainly assist John, anyway, with my time off. So I'll be happy to help John in any way I can.

MR. HILL: Okay.

CHAIRPERSON GRIMSHAW: From your point of view, how much more do you need on this particular white paper, especially for the Interim Report?

MR. BERRYMAN: I want most everything before the end of the year. Actually what was going through my mind, as you were talking about getting together, what would be very helpful is to -- we're going to be later talking about the

outline and what goes into the package that we include in the Interim Report.

And if there are sections in that that you can focus on, and I would need to go through it right now from the standpoint of background information in getting consolidated focus.

I think we need to go back to what is the purpose of having a position paper or a white paper on the subject of the history and what is the purpose of having the marketing element, which I think is less difficult to define because what we're looking at here is where have we been and where, with all of the things that we're looking at in the lighting area, should things be moving to.

So in the sense that you can provide input -- this is an outline that has been reviewed by the Commissioner in charge of the Committee, the Commissioners in the Committee that we work with. And so we'd like to stick pretty close to this.

But if there are compelling reasons to have something said in this Interim Report that essentially brings the things into the proper focus -- we're dealing with an audience that's going to look for answers to questions about why are we doing this, why are we receiving this report and where is it going.

And that's the kind of stuff, if there's some brainstorming done in the next couple of weeks between John and Frank and other members that they could be in touch with, despite some bad experiences with attachments on Email, I would like to have Brian circulate so that everybody here has an Email or maybe we send things to Frank -- I know you have Email access -- that that can be a quick way of getting back and forth with comments and suggestions. And I have one both at work and at home now, so that I could link into that. But this would be an area of primary interest for myself in writing what has to be written in a week's time.

MR. SMITH: If you would like, I've got a home page now on the University, home page on the Internet. So if you'd like, I could take what we've got and put that on my home page and people could call it up on the Internet if they have access, rather than Email, and they can actually see the documents if they want

to do that. That's a possibility.

MR. BERRYMAN: I don't know. Are there any negatives to having drafts on the University home page at this point?

MR. SMITH: I think it's open to everybody, you know. Anybody.

MR. BERRYMAN: That's not -- I mean this is public and the agendas are public and so forth. But I just raise it as a question.

MR. HILL: Well, I still feel that under the guidelines that were given to the Committee that the summation report is a comprehensive outline. And that all that needs to be done is expand the points that are outlined in the outline. In other words, take the outline, take the points and expand them.

The problem I had was that I just don't have enough time to do it by myself. And without support from the Committee this couldn't be done.

MR. BERRYMAN: The outline you're talking about is the outline that you have here?

MR. HILL: Yes, yes.

CHAIRPERSON GRIMSHAW: There are several other copies up here if anybody wants them.

[Comments off the record.]

CHAIRPERSON GRIMSHAW: Do you think there's enough in the outline now to really give a good script writer an opportunity to finish it up?

MR. HILL: Yes. Especially one that -- it would require one that was pretty knowledgeable in the lighting field for this timeframe that we're talking about. The guidelines that we were given were that it was to cover the period of basically 1970 to 1975 -- or 1995.

MR. DAIBER: Fred, you're looking at the history portion of this as being an introduction to the Interim Report, correct? As far as why are we doing this kind of thing, right?

MR. BERRYMAN: No. What we end up in actual -- how many paragraphs that we have in an interim report will be relatively small, but they

should focus back on this information.

I think the more important aspect -- well, in the final report there will certainly be expanded information on where we've been and what we're doing and what the industry is doing. It's not "we" as just in this area.

But what I'm concerned is that we have a good statement about the opportunities, the reason why such an endeavor makes sense, why we're spending our time on this, and transferring that information to the Legislature or those people that will be reading both the Interim Report and then the final.

So the marketing part of it I think we would say more about in the Interim Report. I don't know if anyone else has a -- David or John. I mean we're not writing a monstrous report for the end of this year. It's going to be physically impossible.

Plus my interpretation of what the Commissioners said they wanted was something that answered the questions about what we're doing, why we're doing it and what we anticipate delivering upon the completion. We also have comments to make about the status of the contract work. But I certainly can use a lot of help in putting things into that organized form.

And one aspect I know too much or have been too close and involved in, it would be helpful from the standpoint of what we put into it to have your suggestions from everybody here that would get into this. So that if I'm looking at maybe a three-page report that I can get five paragraphs that are very concise and get the point across.

I don't know how better to express it. But it's been an area where I felt that John was out on a limb somewhat by himself on this and the benefit of the larger group needs to get going on this.

Norm, do you have any?

CHAIRPERSON GRIMSHAW: There are probably several of us that could help, but time and distance is going to be a problem with this.

I like the idea of the home page, though. But you're a newcomer to the

industry almost, as some of the rest of us are. But would you take on the job of script writing, so to speak?

MR. SMITH: Sure. Not a problem.

CHAIRPERSON GRIMSHAW: And get all the input sent to you and see if we can come up with something in the next two weeks or so.

MR. SMITH: Sure.

CHAIRPERSON GRIMSHAW: And you want, what, five or six paragraphs, two pages kind of thing?

MR. BERRYMAN: That's what I --

CHAIRPERSON GRIMSHAW: Yes. And maybe the --

MR. BERRYMAN: And in the next two weeks it would be nice if it was something that you could fit some time in and get a rough out by the end of this week.

CHAIRPERSON GRIMSHAW: And we may revisit this a little bit later because we're going into the Interim Report now and seeing what we can do to fill in the blanks there. But what I would do, I think if I had the task, would be to do a real brain dump on it first and just sit down at the computer and spend about three or four hours just letting the diarrhea run right out of my fingers. And then go back and cut the --

[Laughter.]

MR. BERRYMAN: It's the wrong time of year for that.

CHAIRPERSON GRIMSHAW: I've found that's about the only way my mind works. Once I've got it on paper then I can go back and cut it and make some sense out of it.

Anything else on this Report?

MR. RUBENSTEIN: It seems to me, I've only looked at this thing fairly briefly, the summation report, but it seems to me there's kind of two parts to this.

On the one hand, there's almost what I'd almost call a laundry list of technologies that basically have appeared on the market and some of them

disappeared over the last 20, 25 years.

And then sort of another thread in this seems to be basically some of the experiences that have happened with regard to regulations and the utility rebates and so forth. Those are kind of two separate problems to some extent.

And what I'm wondering is the elaborating essentially on the experience with each one of these technologies is going to take some time. I mean somebody's going to have to basically spend some real time sort of elaborating that.

And to some extent maybe that's less important than it is looking at focusing on the rebates that have happened and how that's affected the market negatively or positively, regulations that have been done both federally and on a state level and the effect that those have had both negatively and positively.

Because it seems to me those are the sorts of things which are probably going to be the most trenchant insertions into the Interim Report that you're working on rather than just the technology descriptions themselves.

So I guess I would suggest that the emphasis, perhaps, might want go into the more analytical part of things, looking at the experiences that have been learned and how those might or might not guide us into developing better and more effective programs in the future. So just off the top of my head.

CHAIRPERSON GRIMSHAW: Okay. Go ahead.

MR. BERRYMAN: What I just passed out, and I didn't give a copy to Francis because it's his write-up, I thought it might be appropriate at this time because it really does tie into what we've just been talking about, the problem statement and discussion of what constitutes a good approach to the emerging technologies, because that's what part of the future.

And I don't know. Do you have your copy?

MR. RUBENSTEIN: Actually, as a matter of fact, I think I do, buried in mine. I'll just do quick-pile management here. Yes, here we are.

MR. BERRYMAN: Okay.

MR. RUBENSTEIN: I guess, as I see it, the emerging technologies piece

kind of dovetails with the Position Paper that John Hill is leading on, the Marketing History. In some sense I guess it seems as though the Marketing History Position Paper basically is primarily looking at technologies primarily which either exist now or have existed in the past, and their influence.

I felt from my guidance from Fred that basically the Emerging Technologies Position Paper, rather, was supposed to be focusing more on technologies which had the potential to improve energy efficiency but are not necessarily readily commercially available at this time. So in some sense I was also looking more ahead rather than perhaps a look at the present or a look backwards.

One of the difficulties in coming up with this Position Paper, if you will, on Emerging Technologies, that there's a fairly close overlap with this rather -- I don't know whether there's been a more recent version, but the preliminary lighting technology matrix -- is there a more recent version of this? Do I have the most -- is this the most recent?

MR. BERRYMAN: That is the most recent.

There's nothing further, is there, Jim?

MR. BENYA: I don't know which version he's looking at.

MR. RUBENSTEIN: It's dated June 25th, 1996. The preliminary lighting technology matrix.

MR. BENYA: Hang on. I'm checking.

MR. RUBENSTEIN: Anyway, it seemed as though basically -- there is quite a bit of overlap between the two. Let's face it. My thinking about it is rather than -- I thought that based on the technology matrix list that the Mahone Group put together, was a good list. It was almost too comprehensive. It was kind of too down at the detailed level.

And it didn't help my thinking in terms of what are the most interesting technologies to focus on, emerging technologies to focus on, which will have some impact relative to some of the things that we're trying to head towards in this Interim Report.

And so I felt -- to some extent I sort of went over the original list and then kind of culled it down to what I thought was a more manageable list.

And I added some additional criteria in terms of whether or not I felt the technology could be marketed within five years. So I'm sort of putting a sort of a more -- perhaps a more serious time constraint on it than is on the original Mahone list.

But I was also trying to focus on technologies which seem to me as though had a large applicability across many building types. So rather than just simply focusing on the little details, trying to look at those particular technologies or bundles of technologies, which appear to be able to have significant influence on energy efficiency throughout the state of California. So there was some emphasis on that.

So, in other words, I guess I would say I almost took Jim's list and then culled it down considerably and sort of made it a little bit more in mind more focused towards a look ahead. But it's a very preliminary list. And I haven't had a chance to talk with the members of the Committee since I put this thing together, which was done very hurriedly. So we could take it on that right now.

MR. BERRYMAN: I had one quick question about your write-up. The word "stuff."

MR. RUBENSTEIN: "Stuff," that's a technical term.

MR. BERRYMAN: The laboratory hierarchy term --

MR. RUBENSTEIN: That is where the brain is not yet in gear but you've got to put something down.

MR. BENYA: Actually there was an update on the 5th of September on that document based on the LEAGue meeting we had. Was it late June, early July?

CHAIRPERSON GRIMSHAW: Right.

MR. BENYA: The input we received from that.

And it'd probably take me about 15 minutes of looking here to see how much overlap remains. A number of the comments that were made at that

LEAGue meeting were insightful along the lines of what you're suggesting, Francis, because the first draft, the one I think you're looking at -- yes, it probably was a little bit too broad.

MR. RUBENSTEIN: Well, there's no sense in arguing. It's very complete. I mean you've listed almost everything. I think the problem I had is I saw the trees for the forest, and I couldn't -- it was hard for me to step back because there was so many trees there basically.

And I think that, given the time constraints that we've got in putting the report together, I think we kind of have to stay focused on the analytical portion that will result from this and this description of the technologies rather than focusing too much time at this point on the technologies themselves.

MR. BERRYMAN: Well, I would agree with Francis -- Fred Berryman -- in that right now the intent of the Interim Report is to get the sense of what we're doing out there so the Legislature can look at it.

And we want to avoid an unbalance of where we've got information on something now, getting it into the report so that somebody grabs it and starts running with an issue that hasn't gotten the review that it's going to get in the next couple of months.

We've got a lot of materials coming together all at once at this time and at the beginning of the year. And so the statements that can be made about emerging technologies, and I think there's several of them in your write-up, that are worthwhile as far as being entries into what we're doing about this and how we're going to be presenting it, --

MR. RUBENSTEIN: I'd like the opportunity basically to spend a little more time putting a bit more brain power into it over the next week or two, basically. I also have some time that I can spend over the next couple of weeks, basically, expanding on some large ones.

But I obviously want to talk with the Committee members first to make sure that I'm going down the right road here. Because to some extent there was

some discussion, that I remember I had with Norm a while ago, that the Emerging Technologies Position Paper was somewhat duplicative with the detailed technology matrix that the Mahone Group was putting together.

Quite frankly, Fred twisted my arm to convince me that, in fact, they may be duplicative, but it was still an important task to do, which is why I put the time into putting this very rough draft together.

CHAIRPERSON GRIMSHAW: When would you like to have the Committee discuss it, later on today?

MR. RUBENSTEIN: Yes, later on today would be good, if we could.

CHAIRPERSON GRIMSHAW: There's three of us here.

MR. RUBENSTEIN: Exactly. So I think we can do that. And that would be good. I don't think it takes too long, but I think we can -- a quick go-around and then maybe quick assignments. I think we can do that expeditiously.

CHAIRPERSON GRIMSHAW: Warren, do you have an early flight this afternoon?

MR. KARP: Yes, I do.

CHAIRPERSON GRIMSHAW: Lunch time?

MR. KARP: 3:00.

CHAIRPERSON GRIMSHAW: Okay. Could we meet at lunch?

MR. KARP: Yes. Meet at lunch is great.

CHAIRPERSON GRIMSHAW: Okay. All right. Let's move on to the Interim Report then, Fred. And if you would kind of tell us how you'd like to work with this, how to discuss it, we'll take your lead since you've done the work on it so far.

MR. BERRYMAN: Well, I wish there were a lot more done at this point but, as I said going in, here's the outline. And we will expand this to maybe triple its size, but no more. Isn't that about what we're looking at, somewhere in the area of an 8- to 10-page report that says all the things in here that we ambitiously put in our outline in a way that makes sense when someone at the Legislature is

looking at this? And, more importantly right now, makes sense to the Commissioners that are going to be reviewing what gets put together here.

And one of the things that I want to avoid is having this thing looked at by the Commissioners as something written by a short-timer. I obviously have a relatively short period of time, but we have this anyway.

I mean the Interim Report is due to meet a legislative deadline of January 1st of delivering something to them. So my situation doesn't change that timing at all.

But I think that what I'd like to do, although I'm going to ask the question: How many have gone through this outline with a fair amount of review time to know what's in there and have thoughts that they're ready to discuss now? Hands.

CHAIRPERSON GRIMSHAW: I've got a few. Okay.

MR. BERRYMAN: Mike Neils.

CHAIRPERSON GRIMSHAW: You've got it. Get a chair up here.

MR. BERRYMAN: You can replace the name tags.

And that question was not intended to exclude all or anyone who has not had a chance or had the time to go over this. I think that, based on what I'm seeing, we do need to walk through this and see where, from the standpoint of the LEAGue, is there something that needs to be said or is it agreed that what we have here at the Commission, at the Staff point, we can take care of that.

So maybe the best thing is to quickly walk through what it's in the outline and see if that has the things in it that you believe should be there, because we wrote this and submitted it to the Commissioners. But we have not really run through this outline before with you.

So if we grab the outlines. And anybody --

MR. OLSON: Fred, are there any other copies of the draft? I'm sorry.

MR. BERRYMAN: I would have to have -- we've got some made.

The basic format of what you have before you is really three parts plus

acknowledgments. The first part is about SB 639. That's the title that we've put on this as a project. There are lost of SB 639s, I found out. I forget what they have to deal with. But in different years SB 639 can be something dealing with mortuaries or something like that. And in the final form the reference has to be a little more complete than that specific.

It's Rosenthal 1993. And it has a specific section of the Public Resources Code that defines this. But there's information in the Public Resources Code -- or in SB 639 that is not contained in the Public Resources Code.

At any rate, we would need to start the report by identifying what this is about. And it would be about the SB 639 project itself. That would be the first section.

The second section or portion of this would be what has been learned from the SB 639 activity. And that involves the work of the LEAGue, the work of the contractor. And if there has been work by Staff, we would be inputting ourselves.

Then the third part of this would be the anticipated SB 639 project results. And this is the crystal ball part of it that we have had an expression by the Commissioners that they would like to see this in the report.

And this is sort of the area where I see most sensitive -- we're not talking about what we've done or why we're doing it. But we're talking about what we expect.

So I think, when we get into this, I would like to get to that most sensitive area and spend probably the most amount of time on that. But I would now go through what we think or what in the outline was thought be appropriate to include. And just so that we have this, the first part of this would be why is this an interim report.

And this is -- there was serious discussion about truncating the material and making the full report to the Legislature on time. And there are some significant benefits from making the report after we've received the final

contractor's report, after we've had the final issues of the position papers and the materials from the LEAGue.

And so I think we're in a good position to write the benefits from and the justification for an interim report. And I think we will get help from the Commissioners on that as well.

Then, under that same section, identifying the background to the SB 639 report. There may be people currently involved in it that aren't necessarily aware of all the background as to why the Legislature wrote this legislation and called upon the Commission to make the report to the Legislature.

They identified a problem.

CHAIRPERSON GRIMSHAW: Can you define that problem that they identified?

MR. BERRYMAN: Are you asking me?

CHAIRPERSON GRIMSHAW: Yes. Can we identify it today?

MR. BERRYMAN: So I'm going to make some notes on here, at least getting a response from this group as to what they see as the problem and the one that was identified at the beginning. Is this what you're suggesting?

CHAIRPERSON GRIMSHAW: Yes.

MR. BERRYMAN: Okay.

CHAIRPERSON GRIMSHAW: Well, the original Bill that was debated in the Legislature had to do primarily with incandescent lamps. And fortunately the industry saw fit to come out and suggest that maybe that was not necessarily the fundamental need.

Now I guess the question that I am not all that familiar with was just what was the thinking at that time about what the problem was. And maybe that'll help us a little bit with the task we have at hand and what do we need to do to respond to the problem.

Has that been well defined in everybody's mind? It's not in mine.

MR. DAIBER: It's not in my mind.

MR. GERBER: Unfortunately -- Bernie, I'm getting quite concerned, because Bernie always shows, and I'm very concerned over Bernie Mezger as to why he's not here. And -- as to that question and the report on that. Has that been entered, Fred, do you know? Is that something he sent you?

MR. BERRYMAN: I had a copy. The pages were -- the second and third page of what I got, that I looked at, was blank. I was going to catch that.

MR. SUGAR: I think I have a copy in my office. They came in this morning on the fax machine.

MR. BERRYMAN: Okay. And I'm wondering if we can get copies of that so that it can be discussed.

MR. SUGAR: I'll see what I can do.

The question is: What was the original purpose of the legislation of SB 639 or its predecessor, or the discussions, preceding discussions.

CHAIRPERSON GRIMSHAW: As the Interim Report states, they state what the identified problem was, the fact that the Legislature identified a problem.

MR. SUGAR: Because I don't think that's addressed in Bernie's paper. But Mike Siminovich had a copy, so I'm going to -- or Dr. Siminovich, excuse me. So I'm going to see if I can make some copies of this.

CHAIRPERSON GRIMSHAW: Jim.

MR. COLE: I think, in addition to whatever the problem was that caused SB 639 and this group to begin to address the problem, I think there's other things that are happening in the lighting industry that should be talked about in addition to the particular problem.

I think the industry, at least on the utility side of things, is undergoing a major restructuring. Lighting programs are falling off the table. In many utilities the whole federal codes and standards issues that came up a year or so ago. I think there are a number of other issues that have happened over the past couple of years which are the context for this group making recommendations.

And I think, in addition to whatever particular problem there was with

SB 639, I think this group ought to describe what else is going on. And its recommendations, I'm sure, are going to be viewed in this much broader context.

I hope someone is crystallizing what those trends are in the industry now and are the context for the recommendations of this group. That's my view, I think.

MR. BERRYMAN: So I see a possible outline improvement where we talk about the problem that was faced with SB 639. When it went into effect there was some, in the opinion of some, some ill-advised legislation that was picking up a rock and going to outlaw a particular lamp, a 100-watt incandescent lamp would be outlawed. And we'll solve this problem this way.

And it was just a little piece of an overall issue that there is an opportunity for better lighting, more efficient lighting and energy savings across the board in lighting. And --

MR. COLE: Well, those general things --

MR. BERRYMAN: -- that was the --

MR. COLE: -- as well as other major trends in the industry that have happened over the past two years that may be even more important than the particular issue that drove SB 639.

MR. BERRYMAN: I'm saying that becomes -- it started for this reason, and it's now continuing for that reason, plus a very much more immediate problem of how to go forward with lighting efficiency programs.

CHAIRPERSON GRIMSHAW: Jim.

MR. BENYA: As I recall SB 639, and certainly I wasn't in the position Fred and others were to observe its creation and all the efforts that went into it, but I think what you just said, Fred, about it, it more or less began as a not particularly-well-thought-out, more of an emotional issue that a legislator, perhaps one of his or her constituents had raised. That it appeared that there was this humongous market of inefficient lighting that was not being dealt with by the Energy Commission or the State in some regulatory or some other means, namely

the incandescent residential marketplace.

And, having read SB 639 many times, one should walk away, as I did, with the impression that the legislator intended that this group and this work focus on that marketplace as being something that had seemed to the legislators at that time to have been overlooked. So that's the foundation as I've always seen our efforts.

And the contract work and many of the discussions we've had have been focused on that. But the other thing that somehow, and again I don't know the magic discussions that may have occurred, but somehow during the process of developing SB 639, the door was left open for general improvements in among other things any regulations that have been created by or will be created by the State in regulating somehow either through Appliance Standards or through the Building Efficiency Standards.

And at this point I'm actually looking back over the accomplishments of the LEAGue to date. And we've actually done some very, very many important things. So in a sense what I felt SB 639 was looking at us to do, as your outline says here, Fred, we've done a pretty good job of getting pretty close to where we're supposed to be at this point.

The things, the points that Jim Cole is raising, though, are something that we haven't focused much on, because as all -- the Standards themselves that we've tended to work with in the ALPAC and the LEAGue, the State of California Standards have been the Appliance Efficiency Standards which regulated the ballast primarily.

And we've been dealing with Energy Efficiency Standards, namely Title 24, primarily in commercial and in industrial lighting but also to a certain extent in residential.

Well, the impacts of, prior to deregulation, the demand-side management and the utility industry getting active in trying to build up a stronger and more vital lighting industry that responds to the energy efficiency issues we

face, that whole movement was parallel to but not necessarily an intrinsic part of everything we did.

But I think your point's very good, Jim, that, as we realize our accomplishments to date, which I do want to talk about when we get into that part of this outline and we start looking at the future, I think we should be well advised to keep in mind what is going to happen as we get into some of these issues.

One point that I've seen, Jim, that I think I want to make sure we talk about later on today, and Fred has said it a couple of times here today, it has to do with lighting practitioners "unconsciously incompetent."

That particular area is not going to be helped any by the deregulation of the utilities. My experience is that, and, quite frankly, it's going the opposite way.

The utilities, some of them, not necessarily California utilities, thank god, but the utilities in other parts of the country have been demonstrating an active interest in getting involved in providing lighting themselves, and not being competent. And so, as we see our industry changing, we need to take this into account.

I think this will tell us what some of our conclusions need to be. Fortunately they're already on Fred's list.

CHAIRPERSON GRIMSHAW: Mike, the report that your Committee is putting together is going to have some recommendations on education, on certification. Do you want to speak to that or shall we hold that off until a little bit later? Is that part of the problem that we're discussing here now?

MR. NEILS: Well, I can talk about it a little bit now. I don't see a problem with doing that.

And I think ultimately what the problem is, as I see it, is you have a situation where people are doing lighting and there is no control necessary. It's totally deregulated, in a sense.

And the only people that get involved with doing lighting are those that have some particular vested interest in the outcome. So why the utilities got

involved with lighting was because it affected their load curves, and so on.

And primarily they, in fact, I don't think, really had in mind ultimately what that customer was going to get out of that lighting system as much as they had in mind what the utility was going to get out of doing the work.

Now that's a pretty harsh statement, and it may not be true for everybody. But I think it's characteristic of the kind of thing that's gone on in the market, that the vendors, the manufacturers, have a vested interest in selling a particular product. And so they tout that product to have certain benefits. And they may or may not have the benefits that are stated right in the piece because there's some fine print there that talks about things like ballast factor and other things, harmonics that may or may not be understood by those who are looking at it.

So I think, fundamentally, I always have believed in this, that the fundamental problem that exists out there is that lighting gets misapplied regularly.

And the other thing is that lighting does not seem to have a value to the end-user in the same way that other products and things have value, because it's not really been sold to have the value that other things have. You know, like carpet and draperies, for example seem to have more value than lighting, or the interior furnishings have more value than lighting.

So fundamentally the education starts out. I mean we go back to what the ALPAC said: You've got to get the end-user, the decisionmaker, some information that says this is what lighting is going to do for you.

The Energy Commission obviously has an efficiency bent. The ALPAC said you can't sell just efficiency; you have to sell the value of the lighting system.

And if you look at the EIS, what is now the EIS Lighting Efficiency Training Course, it's more than just what efficiency is. It's what a lighting system can do for the user.

And so I think that education ultimately is a real key here. And it's getting the market to understand what benefits lighting can have. And that's really what I see needs to be incorporated in our report that talks about certification as

well. But it's the inability of our industry to get the products that were in the lab in the '70s out to the people in a reasonably short period of time.

And it's the inability of our industry to really understand how to create that value for lighting so that people look at it more often than when it fails, for example.

So what caused SB 639 to be written, in the first place, I think, was the fact that we had failed as an industry to get the products that were efficient and beneficial into those places where those who were concerned about it decided, "Well, we'll just get a law that says you have to do this, and we're going to outlaw this stuff that's inefficient."

So there's the crux of the problem, is that as long as manufacturers selling the incandescent lamp, and it burns out and it has to be replaced, there's a benefit to the manufacturer to keep selling that product.

And unless the person on the other end has some educated opinion or knowledge about what to do, other than that particular product, they're simply going to go the way it is. What's on the shelf at the grocery store is an incandescent lamp. And it's what was essentially available when lamps were produced in the first place.

So I don't think you can go by a CPM computer. You probably really can't even buy a 286 any more. You might be able to buy a 386. You can get them for free.

But the benefit of a 386, 486, Pentium is well understood. They're faster, they're better. They get you on to the Internet and so on. But people still use incandescent lamps. They don't understand that the benefit of the incandescent lamp is that you can dim it, okay? That's really the benefit.

Now all the rest of it is possibly -- there's a few other benefits that I haven't stated, but there's other sources out there that are more beneficial, but the average person doesn't understand it.

And I think that's really where we're at with responding to this, is that

we need to get to the Legislature the information that says, "Look, there is a great opportunity here to make lighting a more important part of people's lives, business decisions." And part of it is education. Part of it is having a more professional view towards those practitioners that are there, the ones that actually can solve the problems.

There's a difference between the people that say they can do it and the people that have the confidence in being able to do it. And if we can identify for people in the public and the decisionmakers who those people are and let them make a decision, informed decision, then I think we can transform the market. So that's what's going to be in our paper. I don't know what you guys want to do, but we're going to do that.

CHAIRPERSON GRIMSHAW: Jim.

MR. BENYA: Well, Mike, since you've opened the discussion, I guess I think, if I recall the last couple of meetings, you asked me what was going to be in the deliverable to the Legislature. Certainly there's a number of things on this list, but I want to remind us of some of the stuff we've already talked about.

It seems to me we talked at the last meeting rather significantly about there's a few situations, possibly a few very specific situations, in residential new construction where we could mandate fluorescent lighting sensibly, sensibly, without detracting from the livability or usability of the home.

It seems to me we made that rather clear, that, in fact, I think we, personally I think could go so far as to require it for virtually all permanent lighting in most rooms, leaving out specific rooms, as we discussed last time, as being exempt or not requiring that.

I think we also talked about the outdoor lighting in a residential situation, which the data really supports. It's been an area where more energy efficient sources could simply be required.

Now these are Title 24 type things. These are Building Efficiency Standards for residential construction.

We also talked a little bit about in the commercial area, what a significant difference it would make if we required the energy efficiency of the T8 electronic system for general illumination of lighting systems of that type. And I think that's one we're still kind of discussing. But I'm pretty enthusiastic about the idea. Maybe that's more of a Title 20 or an appliance type of standard, but we've talked about that.

There was some concern raised about whether or not we'd be conflicting with federal laws, EPCACT and others, but we did throw those out as a couple of really good ideas.

So, in short, there are, I think at least, a number of regulatory recommendations that this group could begin to suggest. And I think it's about time.

Part of the problem we've always run into, Mike, is that, although we know what a difference education makes and we know what a difference that an educated provider, consultant or whatever, makes, I think the thing we've always found is, as you said, is getting the information to the decisionmaker. I think the decisionmaker, certainly in residential lighting, is looking at the price of a light bulb and a luminaire.

As our representatives from ALA, not only Bernie but Todd, pointed out the reason why they don't make a large number of fluorescent luminaires for residences is because there's no demand in the marketplace. The uninformed homemaker is not going to change very rapidly unless we give them some more incentive. And I think part of that incentive, from my mind, might have to be regulatory at this point to make big changes.

MR. NEILS: Along those lines, I don't know the values these days, but I've heard in the past that a builder might have a lighting budget of \$300, for example. Well, what are you going to do with \$300 for a house, a 1600-square-foot home? You're not going to do anything really of any significance with a \$300 lighting budget.

That's fundamentally where we start out, is the builder's in control of this budget. And that's where they say, "This is how much you have. If you want to spend more, fine."

Well, --

MR. BENYA: I can tell you from a study that I did, I want to say in about 1992, for PG&E in their Showcase Homes program, we figured out that the delta in first cost for a home to take it -- and the model here would be a three bedroom, let's say, 2,000-square-foot give-or-take home -- the delta in first cost between ordinary lighting and energy efficient lighting, similar to the proposal that, at least, I think we've talked about here, is about \$2500 in materials. Okay.

CHAIRPERSON GRIMSHAW: Eight times.

MR. BENYA: Around a \$1 square foot is the delta between what people would ordinarily put in a home, which is very modest in cost, and between what it would take to have essentially 60-plus lumen per-watt lighting systems that have the same aesthetic result.

And I think that number is probably going to stay fairly constant because it represents the difference between a medium-based socket and an inexpensive lamp in most cases and some sort of fluorescent socket and a ballast and generally a little bit larger, more complex luminaire.

CHAIRPERSON GRIMSHAW: Jim.

MR. COLE: Well, fortunately I guess there are home energy rating systems and energy efficient mortgages that are coming along that may be mechanisms that can be used to deal with this first cost problem in the residential sector. So I think PG&E has a number of residential programs. And I'm not sure whether lighting, efficient lighting, is viewed as part of those programs or not. That's one comment I had.

I had another comment, but Peter may be able to --

MR. SCHWARTZ: Peter Schwartz, PG&E.

Yes. PG&E has recognized the barrier that Jim and Mike and others

have pointed out. And it's always been a struggle to get people to recognize the value of good lighting and particularly energy efficient lighting.

And PG&E, in recognizing that, has put together home energy savings loan programs. Our Energy Center does lots of educational seminars on lighting. We try and encourage it through manufacturer rebates on compact fluorescents.

Certainly there is a lot more that can and needs to be done. But it's something that would be helped by any recommendations we can do to the Legislature to further encourage these types of activities to get us away from the cheapest-to-install-mode of mentality.

It's something that we all, I think, recognize and continue to face. And we have a long way to go before we get there. And certainly, as an utility, PG&E applauds any efforts to improve the load characteristics of lighting as well as meeting the customers' needs for lighting.

It doesn't do us any good, and I think the '70s pointed this out, by promoting energy efficiency and energy conservation that doesn't meet the end-users' needs, because somewhere along the line they find a way to get around it.

MR. COLE: I have one other comments that was a follow-up to Jim's recommendation. If this group thinks that it can mandate efficient lighting in certain situations, I just urge that we recognize that others may take a while to get up the learning curve to believe that what -- particularly in a residential area with the residential builders in California, that I think we need to bring them along.

If we can show that the quality of lighting in these particular mandated applications will be better, and we can bring them along, then I think they would support what the group wants to pursue as mandates.

But if we don't bring them along, and if we try to move in some of these directions without convincing them of the quality of the lighting that we'll get through some of the recommendations in the study, then they will resist just through a lack of understanding.

We've had some cooperative programs with the California Building

Industries Association in the residential duct area where they're a strong supporter of working with us.

And I would urge that we try to frame the recommendations of this group so that we bring the builders along if we think some of the lighting recommendations and mandates are beneficial. I think we need to bring them along and not just -- so I think there's a program between the recommendations, if that's where we're moving in that area, and the implementation, so that we can bring them along, show them, let them get a chance to feel and touch them, so that we don't generate resistance to those kinds of recommendations.

CHAIRPERSON GRIMSHAW: Well, that's well said. And I think this group has identified that all along.

First of all, it is our job to identify those items, those devices that may be appropriate for legislation or other energy saving programs. We're not going to do the mandating. Somebody else down the road will.

But from day one we've identified education, and bringing them along, as you say, as one of the major priorities of the whole project. Not only our job in the LEAGue, but the whole project of upgrading, especially the home, the residential market, has got to be a major sell.

And one of the things that I'm a little disappointed so far is we have not come up with a lot of recommendations so far on how to sell my wife on a more expensive lamp.

MR. RUBENSTEIN: It seems to me, sort of taking a note from the real estate business, I think that the thing is location, location, location. Clearly in talking about residential lighting, the key is availability, availability, availability. You cannot get decent stuff to put in your homes. It's virtually impossible to do unless you buy through the commercial distribution channels.

And it seems to me that lacking good products out there that, in essence, epitomize the good quality lighting we're that being here, if you lack those products, then going in legislatively, before the market basically has those products available,

is going -- simply will not work basically.

I know I find it very frustrating sort of being a do-it-yourselfer who wants to upgrade the lighting in my home basically. The stuff that you find in the usual places is crap. Let's face it. You cannot get good stuff.

And if I can't get good stuff, and I'm supposed to know about this stuff, I can imagine what happens to Joe Six-Pack basically --

CHAIRPERSON GRIMSHAW: Or his wife.

MR. RUBENSTEIN: Exactly.

-- who has absolutely no patience at all with learning that sort of stuff. So I think that's a real critical problem. And I think that until one can start to find a way to get around that, legislation of standards in that one particular area, I think would, quite frankly, probably be disastrous.

MR. BENYA: Well, that deserves -- that's a chicken-and-egg proposition, Francis.

You know, the fact of the matter is I've been, as you have and most of us in this room have been, working with various kinds of efficient lighting, both commercially and occasionally residentially for 10, 15 years maybe more. I would agree that the number of options is very, very limited right now.

And that's, again, what I was pointing out earlier about Todd's comments at our last meeting. There aren't many options because people aren't willing to spend the extra money. They don't feel that they get benefit for that extra money spent. Okay?

It's one of those things where you know you want a fixture to go over your mirror in your bathroom. Try and find more than five attractive fluorescent over-the-mirror lights, more than five at any reasonable price. And I'm saying a reasonable price is \$200.

If I worked all day I'd be lucky to come up with five reasonable alternatives in the entirety of the marketplace, not just what you can get down at Home Depot or something. You can't get one at Home Depot, I don't think. And

that is the problem.

The corollary to that is: What happened if it were mandated that as of January 1st, 1999 thou shalt, and that's it, that you may not sell a mirror-type vanity fixture in California that isn't fluorescent.

Now I'm not necessarily proposing this. This is very harsh. But what if that were the case? If you don't think that companies like Troy Lighting, that Todd works for, or some of the other residential companies wouldn't come up with a hundred varieties to fill the marketplace, that's what would happen. The chicken-and-egg situation would get resolved. We just need to give them adequate time.

The problem Jim raises is without the support of the industry saying, "Yup, that makes sense. Yes, it's the next reasonable step." And, yes, if we can get those products for a \$100 or less and it's got an electronic, a quiet, dimmable, maybe electronic ballast, if we could get to that point then perhaps that wouldn't be such a foolish thing to mandate.

But we have some work to do to get from here to there. It's possible. It's doable. I support it. I design it. I do it today. I'm designing projects that are energy efficient homes where we're using fluorescent lighting in almost every room for everything. It is doable.

But the effort that I have to go through right now is remarkable. It shouldn't be. And that's your point.

MR. NEILS: The other thing is people don't understand that it actually is going to cost them something to get the solutions they're looking for. It may actually be less expensive for you, Francis, to hire Jim or somebody else to go do that job than for you to run around trying to find it.

Right now you can't go find the stuff that you're looking for. Jim can find it for you. Okay? You didn't decide that you would go to Jim to do it, okay. So that's the number one decision that you made. Why didn't you do that? I don't know, but you didn't. And you know there are people out there that can do this.

It's not your area of expertise to go design the lighting for your house,

even though you know a lot about what's going on. That's not your area of expertise.

And I think that's kind of symptomatic of the issue that we have here. And I absolutely agree totally with Jim about this process of getting the user involved. We don't have the user sitting around this table. But I know from experience with the Title 24 process that until we worked out with the California Retailer's Association, with the California Building Industry Association and with all the rest of the user groups, the Hotel/Motel Association, what it was that they could live with it and stomach, we didn't have a solution as far as a regulatory process.

But fundamentally people's viewpoint about the value of lighting has to change, otherwise the manufacturers are not going to produce the products.

And the builders themselves are impacted significantly because, when they put together a house these days, they have to pass a lot of costs back to the homeowner. And so that cost is impacted with school fees. It's impacted with development fees. It's impacted with a whole bunch of things that take away from the value of what can be put into that house.

So certainly they're looking for every way to provide an affordable house to people. And lighting has been a victim because it was never elevated to the level of importance. It's never been there. And it's our job to create some kind of a value, whether it's through the regulatory process or not.

As an example of what Jim's talking about, and I'm not an advocate of regulation as a way of getting something done, but if Title 24 had not incorporated all these strict requirements about how building lighting is controlled, we probably wouldn't see all of the new developments that have happened in building lighting controls.

It's just amazing what's on the marketplace now compared to what was there five years ago. So there is an opportunity. And people that are not advocates of regulation can say, "Well, the market will take care of itself." I would

submit that the market hasn't taken care of itself. And unless you do something, it's not going to take care of itself, because right now the market says, "Give me the cheapest product you can possibly give me that I can sell to the homeowner and get in and out of this place."

And lighting in homes is either a custom design that people who want it, they go to Jim and other people that do that kind of work, or they take what's given to them and they try to retrofit later.

CHAIRPERSON GRIMSHAW: Sy, and then Peter.

MR. GERBER: You know, I don't want to be competitive with anybody, but if Bernie were sitting here -- I'm trying to substitute for him as to what he would say now -- I think the first thing off is the recommendations.

And would you allow me to read this?

CHAIRPERSON GRIMSHAW: Sure. Go ahead.

MR. GERBER: We recommend the combination of increased regulation and a very strong voluntary residential lighting program.

The voluntary program is outlined in Appendix B. We're on page 7 of --

CHAIRPERSON GRIMSHAW: Got you.

MR. GERBER: The increased regulation is intended to aid in increasing consumer awareness to lighting energy efficiency and make positive gains in household areas of utilitarian acceptance. The recommended areas for immediate addition to Title 24 are: Outdoor wall-mounted fixtures.

It was estimated in the HM report that these fixtures accounted for 10.6 percent of the lighting energy use in the average residence.

The addition of controls is important here: Motion detectors and/or photocells on longer-use security systems. The current number of fixtures statewide in this category: 24,438,000 for the HM study.

All garage and utility room fixtures. From the HM data it was estimated that these fixtures locations utilize 11.68 percent of the state's lighting electrical energy. The current number of fixtures in this category is 24,413,000.

Although there was no quantity or energy data on the use of closet lights, it is recommended that these might be considered for the Title 24 requirement. Consumer awareness and familiarity with the lighting quality would be gained.

All of the above are recommended for new construction only. Policing, enforcing or controlling the replacements in old construction would be impossible.

It is specifically not recommended that manufacturers be required to produce light fixtures physically compatible with fluorescent lamps. It is firmly believed that market forces put into play by the voluntary program, combined with limited regulation, competition and the growth of consumer demand through the consumer awareness promotions will be the most successful path.

In addition, most lighting manufacturers are national or global in market scope. And regulation in a single state could be ineffective or even have negative reactions.

This document is a consensus report of the Residential Lighting Focus Group of the CEC's LEAGue organization.

I believe, to sum this up, a little bit of what everybody is saying, although there was study put into report here, a combination of mandate that I believe more consumer awareness of lighting products be initiated.

In September's issue of *Electrical Energy News*, I don't know whether you fellows get that, but that issue had a tremendous amount of new lamps. It had a tremendous amount of achievement by the lamp people in the past years. It also had in that issue new lamps. And all of these were focused on more efficiency and energy.

I do believe that the people who manufacture lamps are consistently trying to better each other competitively as to who comes out with the more efficient, better quality lamp, whether it be a fluorescent. They've even achieved beating themselves in their own fluorescent products. They've achieved energy in forms of incandescent, halogen, HID. Every one of these lamps are a great

percentage more efficient than they were a short 5 to 10 years ago.

So the industry within itself competitively has to, in order to keep their market share, and it's a business, it's still a business, they have to constantly beat each other out as far as efficiency and quality.

CHAIRPERSON GRIMSHAW: Peter.

MR. SCHWARTZ: Yes. Peter Schwartz, PG&E.

What I've been hearing from Sy and from Mike and Jim and others is a need to not only create push but pull strategies in the marketplace.

What we're looking at is trying to get manufacturers to produce more types of luminaires and lamps for the residential market to get consumers more aware of the benefits and value of these types of products. And also, in the middle, to get builders and real estate folks to be able to differentiate the product with these enhanced systems.

And it seems to lead to, as Sy was saying, a combination of some type of regulation or some kind of incentive to manufacturers to produce these lamps.

And on the end-user's side is education and awareness that, hey, there's value in good lighting. How that's implemented suggests a variety of different means from widespread media education to more targeted education via builders.

So, as they're selling their product, they can educate and inform the end-user why their product is better than someone else's down the street and why they're going to get more value, the end-user will get more value in the end-run by buying one home versus the other.

And that also goes, I think, to Jim Cole's comment regarding a home energy rating system. So I think we need to attack the market from all ends. And instead of is it a chicken-or-egg thing, I think we need to nourish the chicken and hatch the egg simultaneously. I think that pretty much sums up my thoughts.

MR. KARP: I have a question for someone. There was an energy convention down in Los Angeles this last week for two days. It was advertised in the paper for about two weeks. I wonder if anyone here attended that convention.

Or, David, what was the turn-out?

MR. JONES: Well, there were two sections to that meeting. Some were conferences and papers put forward, and then there was an expo. And I would guess there was about 200 people at the conferences, and the expo seemed very well attended.

MR. KARP: Very well attended?

MR. JONES: Yes, I think so.

MR. KARP: There's another program that CTAC is putting on next month, an energy symposium. But I believe it's limited to 100 attendees, if I'm not mistaken, because of the size of the room that they're putting it in.

Things like this are extremely critical. But I had heard that the meeting in Los Angeles was not well attended, the booth area. I don't know about the classrooms and the seminars.

MR. JONES: I mean my perspective is from the time I got out of the seminars to go around the booths, so they were obviously busier then than perhaps they would be during the course of the day.

MR. KARP: I think the --

MR. JONES: And there was a mixture of both lighting and other technologies as well. Again, it was -- there were a lot of practitioners there. There was an amount of preaching to the choir, to some extent, people in the business who had gone to see what was going on.

Whether users were turning up there, I guess we'll have to wait until the numbers come out and we can review what went on there.

MR. KARP: Thank you.

MR. LIEBEL: One thing I'd like to interject -- this is Brian Liebel, Design+, a member of the LEAGue -- in listening to the discussion.

The issue of residential lighting, of course, we've heard discussion from Jim regarding the manufacturer side and then from Francis talking about the purchasers' side of things.

And I think that the issue of regulation and voluntary programs is good, insofar as we also address that critical area, which is at point of sale, because we have to recognize that the residential market is based on people who do not know a lot about lighting and they're going to interact with people who do not know a lot about lighting in a specific place in the residential marketplace, primarily that store where the purchase is made for retrofit or for existing installations.

In general, the marketplace is heading more towards self-guided places. You go to a Home Depot store or Orchard Supply or Home Base or wherever, and these fixtures are placed in a setting where you don't have a lot of help and the people who are selling do not know much in order to help you make that decision.

And so that particular area I think is one that the gap needs to be looked at as well, is where you can make that connection so that people can be educated in a real way. And it's a tough one to get to.

I know because my wife owns a store, a lighting store. She has tried to sell fluorescent in the past with some of the products that she has that are better products. And she has a very hard time doing it and convincing people. And it's a very tough market out there.

MR. GERBER: ALA is going to ask the members, the showroom members, if -- and also in conjunction with the manufacturers -- that in, shall I say in parallel, that we come up with energy savings displays in which the showrooms will take an active part in displaying and learning how to sell. Now that's at the showroom level.

I am sure that the same can be committed to the do-it-yourself people. Display education literature.

Now ALA started at the showroom. I am sure there's some organization that we can get at at the DIY level, do-it-yourself level, the Home Base, the Builder's Square, who can make an attempt to achieve the same.

There are many, many energy savings fixtures that can be found in both areas, the showrooms and do-it-yourself. It's just a question of educating the

customer so that there would be a better flow-through, sell-through and usage of this type of product.

MR. LIEBEL: Exactly. And that's what I was trying to address. Very good.

And our experience, in talking with both from the supplier's side and also the retailer's side of this, it is exactly that they're looking for, which is the flow of the product that the stores are looking for and whether, in fact, they can give up enough real estate, if you will, for those educational promotional things, whether that will encourage people to create that flow. And I think that's a real important target to try to address.

MR. BENYA: Jim Benya.

Just an observation, though, that I want to float on top of this. And, again, at the risk of sounding like I'm pro-regulation, let me just say that I think it's up to a lot of people to decide whether regulation is the appropriate mechanism or not.

But I can go into Home Depot. I can buy a two-by-four fluorescent troffer, okay. An ordinary, inexpensive, garden variety fluorescent troffer with an electronic ballast. And I can buy the T8 lamps at Home Depot tomorrow, anywhere, today. Okay. Particularly in the western states where we have tough energy codes.

I bet you I'd have hard time finding that same product at a Home Depot in Illinois, okay, where they don't have an energy code.

What does that tell you? I hate to say it, but it tells me that regulations have a way of forcing us to realize the importance of that decision, maybe sometimes have to make it.

And it's been successful, I think. In California we've learned from -- all the reports we've had over the years, the periodic efficiency reports to the Legislature, we've learned that Title 24 made a huge difference. It was a stick. It was a series of regulations. And it made a huge difference in commercial energy use.

And we've been very careful, I think, as a community and the

Commission, which has been empowered to come up with the regulations, we've been careful with the residential marketplace. And I think what SB 639 was designed to ask the question is: Have we been too careful. And I think that's the issue before us, at least one of them.

CHAIRPERSON GRIMSHAW: Mike.

MR. NEILS: The challenge, if you're going to do a regulation, is to come up with that set of criteria that is acceptable to all the people that are sitting around the table. So it's the user. It's the providers of product, the people who are constructing the facilities. It's the building officials. It's everybody that's involved has to be onboard for the decision.

The decision for Title 24 in the commercial sector was to have a fluorescent lighting regulation, primarily fluorescent, primarily efficient fluorescent. It didn't preclude people originally from installing four-lamp troffers, which are very inefficient, but it did encourage people to do the job more efficiently.

And I'm going back to '78 now, for those of you who are wondering what I'm talking about, but gradually the four-lamp troffer became very difficult to use and do a good lighting job.

And the other thing was that the regulations were not so restrictive that you couldn't use electromagnetic ballasts, but it encouraged people to use the electronic ballast. It encouraged people to use controls, and so on.

Ultimately it became more restrictive about the use of controls. And this last version that we're working with now mandates a lot of requirements about controls.

But the other side of it is it did not outlaw incandescent lamps. It basically has a provision in there that allows you to use incandescent lamps. But you can't light an office, an entire office building with incandescent. It's just not possible to do a good lighting job within Title 24 with all incandescents.

So the challenge to this group is to say, for residential, what is it that makes sense that people would come to as a group and say, you know, whether

you're a builder, whether you're somebody selling the product, whether you're a manufacturer, whether you're a designer of systems, whoever it might be, building official, what is that set of items that are palatable to all those groups.

And the kind of outline that Bernie has brought is a start. That's something that you can probably agree upon. I would say outdoor lighting, because you'd be replacing those awful yard lights anyway. I mean if you teach people how to do a good outdoor lighting job, for example. I mean that would be something that we could say.

And I don't think anybody here would say, "Boy, I'm really going to get hurt by the fact that I can't sell that yard light any more." Okay. So that's a start. And there's a lot of good opportunities outside.

As Jim said, there's good opportunities within the bathroom, for example, to do some things there. I mean we have a fluorescent lighting standard here in California for new construction.

But that's the challenge, I think, is to find out what we can do that makes sense. If somebody installs incandescent lighting, mandate that they have a dimmer on it. What's wrong with that? It's a good thing. It saves energy. It makes the thing last longer. There's nothing wrong with that. Maybe that's something to do.

Maybe mandate that the incandescent lighting they use is more efficient, forcing more the efficient product into the marketplace than the inefficient stuff. Because I couldn't think of what it was that I wanted to say, Francis, but...

MR. LIEBEL: One of the things, of course, I think that makes the --

CHAIRPERSON GRIMSHAW: Called stuff.

MR. LIEBEL: Yes.

-- the distinction between the commercial and the residential is, of course, on the commercial side we have something that professional engineers have to engineer these things. We do it on a wattage-per-square-foot basis. And there's a certain amount of work involved in doing that.

And, of course, the residential marketplace is much different. You have people, architects, who are designing the homes. And some ways it's a lot easier to address it by product-specific and application-specific usages, I would think.

And I agree with you, Jim, on the ideas that you're presenting, that maybe that's the best way to approach it and get some of these issues resolved, as well as bring the market into play on this. I do think that there's a lot of credence to that. It is the question of what kind of -- where do you draw that line and where do you make the limit.

On your point, Mike, with regard to more efficient incandescents, that's a tough one, because it's still a medium-base socket and people are going to put in whatever they want. So it's not a long-term solution. And there's a middle ground here to be attained. And I think we'll get there.

MR. BENYA: Just a quick point. Keep in mind that the reason why I brought up Home Depot and T8 lamps there, the person who's buying that is not a professional engineer. The person who is buying that is a contractor. A professional engineer or architect never looked at the plans.

MR. LIEBEL: Exactly. But that contractor that's buying that is probably not buying it for the home.

MR. BENYA: Well, that's --

MR. LIEBEL: They're buying that troffer --

MR. BENYA: Agreed, agreed. They are buying it for commercial.

MR. LIEBEL: Correct.

MR. BENYA: Because whether an architect or engineer has looked at the project's drawings ever or not, it still has to meet the Energy Code.

MR. LIEBEL: Right.

MR. KARP: My involvement is strictly in the outdoor lighting. And in listening to what Mike said, there are timers and dimmers and sensors, which we discussed at the last ALA Review meeting, prior to this meeting.

And these could be mandated. They could be made so that people use

them. It will get my neighbor to stop using his barn light all night long. I won't have to shoot it out every other week.

So there are things that can be done to lower the energy that are very inexpensive to the homeowner. There are things that could be made inexpensively to the fixture. You have so many lighting manufacturers who have dropped out of lanterns and brackets and things because they cannot be competitive in the marketplace.

So by making fixtures more expensive you incur more and greater imports to the Home Depots and to the marketplaces. So you find fewer and fewer quality fixtures there.

MR. BERRYMAN: I might interject one point here on how this process will go forward. The important thing that I see coming out of the LEAGue is to frame, whether it's position papers, documents that can be used as the starters for hearings and proceedings that would be separate, totally separate from the LEAGue that would go forth with the recommendations.

In other words, I've heard a lot of discussion here that gets into the detail of how some mandatory provisions in the residential might come together.

Actually what the legislation calls for is that, where these things are seen as appropriate and decided as appropriate, that the order instituting hearings on this would occur and then there would be a separate activity that would get into the detail and there might be a desire to indicate how advisory committees or contacts with the industry be a very important part of proceeding with setting some new and innovative regulations.

There also might be something that goes into the final report of the LEAGue that suggests some timing that would be appropriate, based on Jim Cole's comment, that a group having looked at it thinks that a solution is there and it's there today in today's technology. But the mood of the industry may take one cycle of this Building Code to become acceptable.

We're right now at the point of making changes for the 1998 Title 24

State Building Code for Residential and Nonresidential. And those things have to happen right now and be accepted and approved and adopted and through the State Building Standards Commission in practically no time.

So we're really at the beginning of the process for the next version of the State Building Code. And, in my view of things, 19 years have passed very fast. And we've gotten some things done. But if a project has a three- to five-year life to it to do well, that is not out of the question.

I think that the need to do something for the 1998 standards, it would be great for those things that we can do. But also putting a time table and a schedule that includes the marketing of the ideas, the negotiations with the parts of the industry that'll take it, I think that's part of it.

I see that we've moved really to the last page, which was Item 6 of the outline. And our discussions have been rulemaking opportunities under consideration.

So is that a hand?

MR. NEILS: Yes. I'm going to answer Norm's question now, the first question, which was what is my Committee doing.

Well, my Committee facilitator met with Fred. In other words, I met with Fred last week.

[Laughter.]

MR. NEILS: And Fred was looking for some input from me, from our Committee. And we haven't really had a chance to work as a Committee to give input back regarding what it is we should ask the Legislature to support relative to market transformation.

Some ideas come out of that that I think are excellent. We currently have a certificate program in lighting at Consumnes River College here in Sacramento. It is, to my knowledge, the only community college in California that actually has a certificate in lighting. And it was the goal of the ALPAC to have these programs throughout California.

There's a couple of things that remain to be done, plenty that remains to be done, one of which is to get additional community colleges to have this kind of a program, a certificate in lighting.

And, having done it here in Sacramento, there's a knowledge of the process that went through there, that we went through there to get it. And there are some interests in the rest of the state. Specifically in the Bay Area there's some interest at Cañada College to do this.

We think that support from the Legislature in the way of some funding to support the transference of this kind of program into other community colleges would be a good thing to recommend.

The idea of doing distance learning, which is onboard at Consumnes. Right now they have the ability to transmit educational programs via satellite link to anywhere in the country. And that distance learning is a hot new topic, because it allows a lot of options relative to putting on a course that otherwise wouldn't be available.

If you can't get students today in the community college basically you don't put the course on. So these courses have required support. And if you had distance learning, for example, what you would be able to do is to have somebody in Los Angeles, somebody in Chico, somebody even in Oregon or anyplace else in the country actually take these courses. And Consumnes is set up to do that right now. I think that would be something that could be supported by additional support.

As far as the certification of lighting practitioners is concerned, there's a symbiotic relationship between the education process and the certification process. The facility's managers have found out that, after they've gotten a certification program, the certified facility manager, which is sponsored by IFMA, the International Facility Manager's Association, that there is a tremendous interest in courses in facility management.

There's one here at Sacramento State University that has drawn a lot of people into it. And the community college that I spoke about is also interested in

perhaps putting a certificate program together in that.

Well, as far as the support that's necessary relative to certification is concerned, there is a national body, National Council on Qualifications for the Lighting Professions, that is developing a test. It's not done yet. It will be on the street within a reasonable period of time. November.

CHAIRPERSON GRIMSHAW: Eleven months.

MR. NEILS: November of '97. Okay. So eleven months from now there will be a test. There are some things that we should be aware of that are necessary, one of which is how do people that are out there, that haven't taken a formal education in lighting in the last 20 years, how do they prepare for this test.

So one of the things that's necessary is a review course. And we could support the development of a review course in a number of different locations. It could be California Extension. It could be in the community college system.

And what kinds of things get developed for that would be, for example, a relationship between the NCQLP and these community colleges could be a brochure that comes from the NCQLP to test applicants, that says, "Okay. Here's what you can expect in the test and here are some sample questions," for example. Those could be given to the people that take the review course.

And, as an outcome, we could have the people in the review course take a second set of those kind of sample questions that would then be evidence that actually they did learn something in the process. And that's in the form of some kind of a deliverable, let's say.

CHAIRPERSON GRIMSHAW: Mike, just to that point, --

MR. NEILS: Sure.

CHAIRPERSON GRIMSHAW: -- the NCQLP is putting together the body of knowledge that will cover the test next year. And that should be available rather soon for anybody that wants to know what the references are that will cover all of that information.

And it's going to be a fairly small list of references, something that any

college could certainly afford.

MR. NEILS: The reason I talk about deliverables is that any time there's a state contract there has to be deliverables.

The deliverable in this case could be you ask the instructor for the syllabus of the course, what are you going to teach these people. You ask them for the results of that first little test that they took to evaluate. It's kind of like a pre-course evaluation of the students.

You give them another test at the end of it. It's a post-course evaluation. That's the deliverable.

You haven't interfered with the delivery of the education or dictated how it's going to be done, what's going to be contained, or even asked the instructor to give the material back to the State, but it is a definable deliverable. And I think it makes a heck of a lot of sense.

There's going to be a requirement for the development of CEU programs. Now CEU programs are going to require course materials. There's a whole technical society out there, the EIS, that can develop course materials. Those kinds of things can be done. And these are the things that we've talked about.

I don't know, Fred, did I miss something that you'd like to add, because I've just got your notes and my recollection of what we talked about. But we'd like to incorporate those into our report on certification. And it would add some of the things that the LEAGue had asked us to put in about education.

And hopefully I'll be able to get some of this together. I don't see it happening before the end of the year, though. I mean, very frankly, I don't think I can commit to getting a revised position paper by the end of the year.

CHAIRPERSON GRIMSHAW: Well, on that point let me take over here a minute.

MR. NEILS: Sure.

CHAIRPERSON GRIMSHAW: We've now had a pretty decent discussion on the History Paper. And we've had a good discussion on the

residential and the education program.

What I'd like to do now is break for lunch and give you about 50 minutes to go out and grab something and come back. And we'll go back to the Interim Report and see if we can knock that out in the first hour after lunch and give the Commission people a pretty good chance to put that together.

MR. KARP: I'm losing them. I just wanted to say if they would take that residential report on page 10, it touches 90 percent of what we discussed here this morning in an outline form hitting on regulation, not regulating, having educational programs, having award incentive programs. It touches on everything we've discussed so far very thoroughly and very adequately.

MR. SUGAR: This is John Sugar.

I think we may have to discuss the residential report some this afternoon. I'm listed on here as a party, and I was unable to attend the last meeting of this group.

I'm concerned that there are some distinct differences between what is being recommended here and the discussions which took part in the LEAGue last month when we discussed specifically potential regulation for the residential sector.

I also want to touch briefly on recommendations regarding tax credits or other public funding for marketing incentives, because I personally don't believe that funding is available. And we're not in a position to go forward recommending funding.

There were a couple of suggestions made last time regarding possible programs. Peter Bleasby raised one about possibly design competition or some other way of encouraging development of fixtures that would be efficient to deal with some of the problems that Francis has raised.

I asked him if industry is interested in financing something like that, because we don't have the money. And I was sort of hoping he would be here to address that. Apparently he isn't. I don't know if he spoke with anyone. That was sort of a major item.

If we could get back to that, I would appreciate it.

CHAIRPERSON GRIMSHAW: Okay.

MR. SUGAR: I'm kind of concerned, as this stands.

MR. BERRYMAN: We're not going to have a nice lunch brought in here. I checked the Governor, and he was supposed to come here, but no lunch.

[Comments off the record. Luncheon recess taken from 12:12 to 1:32 p.m.]

CHAIRPERSON GRIMSHAW: Bill Daiber is passing out the latest revision, final revision we hope, of the Streetlighting and Area Lighting Position Paper. And I invite him to make some comments about the latest revision, which would be Section 9, back towards the tail end.

MR. DAIBER: Thanks, Norm.

The only revision we made was based on the last LEAGue meeting. A comment was made that we should be a little bit stronger about the research products that are ongoing concerning the use of whiter light sources for lower levels of lighting. So we've added a paragraph and kind of revised Section 9, which was on page 6, to address the research projects that are ongoing right now.

And so we will accept any comments, corrections that you might feel are appropriate. And we can put this position paper to bed.

CHAIRPERSON GRIMSHAW: Gale.

MS. SPENCER: Gale Spencer.

After I said I wasn't going to say anything, looking at the changes Bill just pointed out, I question whether we're talking about the same vision of lower wattages or lower illuminances?

MR. DAIBER: Wattages. Basically that's the way that most of the studies are talking, because --

MS. SPENCER: I thought it was illumination levels.

MR. DAIBER: No, no. Because you're talking about a different type of visibility, if you will. And so that a lower efficacy white light has better visibility at

lower levels than a yellow light.

CHAIRPERSON GRIMSHAW: But she is also right in that it's lower illuminance levels, but you can get there with lower wattage.

MS. SPENCER: But not lower than the high-pressure sodium wattage. Instead of increasing wattages significantly with the white light to obtain the same foot candle levels, you are not going to drop your white light wattage below that of the yellow light level.

MR. SMITH: If I understood the paper correctly, I thought the assumption on the 15 years was that it was constant lumens.

MR. DAIBER: Let's go back through that again.

MR. SMITH: I thought it was constant lumens. It specifically says "constant lumens" in the study. It says -- when they gave the assumptions on how they did the savings to come up with the 15-year savings, I thought they specifically said it was based on upon constant lumens; is that incorrect or is that correct?

I've got it marked.

MR. SUGAR: This is John Sugar.

Frank, are you talking about the consultant's report?

MR. SMITH: Yes.

MR. SUGAR: Oh, I think that what Bill is discussing isn't part of the Heschong Mahone Group's.

MR. DAIBER: No, no.

MR. SUGAR: Heschong Mahone did redo their work to keep --

MR. SMITH: Oh, okay.

MR. SUGAR: -- that constant.

MR. DAIBER: No. This is based on the studies. And the studies do say, "The same levels of visibility" or "vision," "the same vision at lower wattage."

Mark Ray's [phonetic] studies say that, and I think Sam Breuman's [phonetic] do too.

No?

MR. RUBENSTEIN: This is a real walk on the wild side here, folks.

MR. DAIBER: Great for after lunch.

MR. RUBENSTEIN: I think that Gale has hit it there, as far as I understand it. If you're going out use white light sources for street light-type applications -- we're talking about here, street lighting applications --

MR. DAIBER: Outdoor lighting, yes.

MR. RUBENSTEIN: -- to replace high pressure sodium, that's going to come at a cost of power. if you want to keep the same lumens.

MR. DAIBER: No. But the argument in those is that you don't need the same lumens with a whiter light source.

MR. BENYA: Francis, have you spoken with anybody recently on the Roadway Lighting Committee about this, the impact of all this stuff?

MR. RUBENSTEIN: Yes. Bob Clear. And he's extremely uncomfortable with the way this whole thing is going.

MR. BENYA: Well, I've spoken to a couple of people as well. And I think "uncomfortable" is a very good term to describe -- "uncomfortable" and "unstable" are good terms to describe how the photopic, scotopic, visual, visibility, visual sensitivity issue is impacting Roadway Lighting right now. Those are the words to describe it.

I have been told some very conflicting things by various members of the Committee. And one of them is that there's, I think, a general belief by some people that the levels that are being recommended right now are too high or they are not well enough researched.

And there's a move afoot to, in fact, increase exterior lighting levels due to some concerns, at least some people feel that we might not be recommending enough exterior lighting for security purposes.

On the other hand, there's also a move afoot to set a single level with respect to exterior lighting levels regardless of context. Whereas, right now in the handbook and in the recommended practices, there's a context-based decision how

much is appropriate. And that that may be changing, too, or at least some people think it ought to.

"Unstable" is the best way to describe it.

I don't think we should count on saving energy if we do find it's sensible to shift to a white light source. I don't think we should not count on it. I think we should just wait and see, because we're learning a lot right now about outdoor lighting and how the human eye sees at night.

MR. RUBENSTEIN: The issue is not so much a question of preference. I don't think there's any question of the fact that preference -- and especially designers prefer white light source-type pressure sodium. I don't think that's an issue there.

I think the issue is basically whether we feel confident that the research that's been done to date to basically bank on the fact that this better visibility is actually there and we can get at a reasonable constant power.

I don't think the research is there to support that. I just do not think that's the case.

MR. BERRYMAN: Just a quick comment on this. Looking at what Bill Daiber or the Committee has in the sentences that were added in Section 9, I see it saying that "research not yet published but indications are." And that's a caveat that I think agrees with the fact that there's continued discussion about this --

MR. DAIBER: And basically that part of the statement was taken right from Mark Ray's comments on his studies.

MR. BERRYMAN: So I think what's written here is clear. And it also is a clear indication that we could discuss this the rest of the afternoon. But a Committee of two has completed -- this is the first report that's come in with a statement that it's done -- so it says something for committee size.

MR. DAIBER: But it's got to be done right.

But I think the point of this is that -- and the reason that this was put in is that we kind -- we tried to skirt around that issue earlier. And the point was made

at the last time that we need to put something in here that says that research is ongoing.

Now whether or not the final research is going to come out and support what you're saying, Gale, and it's a very good likelihood that it will, but what Mark Ray is saying right now is that you can get equal visibility for lower wattage with a white light source.

MS. SPENCER: I guess my question is when you say lower wattages, lower than what? You are comparing --

MR. DAIBER: I'm not trying to compare it --

MS. SPENCER: You're dropping the -- when you say "lower," it's lower than something implied in the word. And so when you're saying "lower wattages," are you saying that the white light producing source can be at a lower wattage or we're going to be saving energy over the wattage of the yellow light source?

I'm just saying that this is extremely misleading what you have in here, the exact wording that you have right now, because you could interpret exactly these words several different ways without knowing anything else about what's going on in the research.

MR. DAIBER: That's true. And it could be that you could go from 400-watt high pressure sodium to a 350-watt full start metal halide and have the same visibility. You could stay with 400-watt metal halide but, because you can deal with lower levels, you can increase your spacing and reduce wattage on a system-wide basis as opposed to a lamp-per-lamp basis.

There's a lot of ways that you could interpret lower wattage. And I'm not attempting or we're not attempting to interpret how lower wattage would be addressed in a design situation.

MS. SPENCER: I don't approve of the way it's written.

MR. DAIBER: Any other comments? Should we correct it? Should we -- how do we want to address it?

MR. BENYA: I don't feel quite as strongly as Gale does. But I think

based on Francis' comments and some of my observations, you may want to just suggest that this area presents some possibilities as opposed to probabilities.

Personally I tend to agree with you.

I've read Mark's work and I've talked with Mark a great deal about it. And I think intuitively many of us know that the opportunity is there, but I don't think that -- I'd have to second Francis' comment. We just don't know enough yet to make as broad a general statement as that.

I think to say the area shows promise would be well chosen words. But to say that it can happen, it could happen, and to be as specific as this, I think we ought to be a little bit more careful.

MR. NEILS: I have a suggestion. What if you had the EIS Roadway and Lighting Committee take a look at that comment and maybe make a suggestion. If it was to be included, what it should be.

MR. DAIBER: I don't have a problem with that. I can get that done in the next day or so. But I think the Roadway Committee right now is not addressing this issue because it's still in the research arena.

And somehow if we could just -- I don't have a problem with dropping the reference to lower wattage at all.

MR. RUBENSTEIN: Well, can you point out to which page you're looking at here?

MR. DAIBER: Oh, page 6.

MR. RUBENSTEIN: I woke up stupid today. I'm trying to figure out -- page 6.

MR. DAIBER: Page 6, Section 9. The underlined paragraph.

MR. RUBENSTEIN: The underlined section is not what Gale is beefing about, but the words --

MR. DAIBER: Oh, yes. Because it has in there the lower wattages reference on the fourth line.

CHAIRPERSON GRIMSHAW: Would it be more palatable to you if he

said, "May provide some advantage in energy," period.

MS. SPENCER: That's fine.

MR. DAIBER: Okay. "May provide the same vision with" --

CHAIRPERSON GRIMSHAW: No. Just, "May provide some advantage in energy."

MR. DAIBER: Yes. "Over yellow light sources."

CHAIRPERSON GRIMSHAW: That's implied by the discussion, --

MR. DAIBER: Yes.

CHAIRPERSON GRIMSHAW: -- but that's fine.

I'd like to make a quick shift here. We have 16 minutes until two o'clock. And the coach is going to go back to a pumpkin.

Mike, would you like to lay on us what Jackie has to offer?

MR. NEILS: I got a fax from Jacqueline Callahan, who is the Executive Director of the NCQLP, in response to the Position Paper on Education and Certification. And I received this fax last week, the 12th. So I've had it a few days, basically.

And in it what she does is she addresses what the NCQLP is currently doing, what they plan to do. And I just want to point out some salient points.

She talks specifically about the position statements in here. What I'm going to do is I'm going to pass this out so that you can all have it and just read it and take a look at it.

In response to what we've gotten from the LEAGue, there has been one comment received from NEMA, Peter Bleasby, regarding the position statement and the NCQLP, in particular, that we should be talking less about past history and more about what the meaning of certification is and what we can do with it.

And I think Jacqueline has given us a lot of information that we can use to satisfy Peter's concerns.

The other thing that I would point out is that for those of you who don't know about the NCQLP, it was an organization that was established five years ago.

And it had originally five Board members. And now all those five Board members are gone, and there's a list of 96 people in here that are involved. So it has some momentum.

And, as Fred pointed out earlier, the test will be ready in November.

There's some things that the NCQLP needs. And one of the things is that NCQLP is still looking for support from the industry. And I think that the LEAGue can play a pretty large part in indicating the benefit that can come from a certification program and how it can affect a lot of the things that the LEAGue is looking to do.

So there can be kind of a catalyst relationship from the activity that occurs here to what NCQLP will, in fact, do. So I don't have anything else to say really about it.

If there's any questions, we have a couple of the NCQLP Board members here and other people that are participating in the NCQLP around the table. So if anybody has specific questions about where the NCQLP is going, I'm sure that Fred and Jim Cole and Jim Benya, Larry Ayers and those folks would be able to -- Norm, I understand, is now involved. And so that's --

CHAIRPERSON GRIMSHAW: Almost got a quorum here.

MR. NEILS: That's about all I have to say.

I did talk with Jim Cole today about the whole issue of funding. As you may or may not know, there's an EPA grant that the NCQLP is working on right now -- working against, basically. That's the major funding source, but there's a requirement for matching funds. And there's also a requirement for ongoing nonrestricted funds.

And so I think now is the time when really that base of funding has to be replenished. And so what we're doing here, I think, is really key to integrating with the NCQLP's activities.

CHAIRPERSON GRIMSHAW: I would just add to that.

Jacqueline Callahan, who's the Executive Director of NCQLP, and

several of the members of the Board, not myself, took a look at the Position Paper that was written early on relative to Certification and Education.

And that stimulated this paper, which I think is an excellent statement of where the organization is going, what it's doing, why is it there.

And it addresses one of the areas that we recommended or it was recommended in the Position Paper that the certification organization, NCQLP, go forward with a accreditation of courses at curricula for lighting education.

And on page 4 it's listed as Item 3, proposed position No. 3 discussion. And this was something that a lot of us weren't aware of at the time, that for a certification organization to have clearcut certification credentials.

In other words, it's not burdened by other self-interest or interests in other organizations, businesses and so forth, that accreditation of educational programs not be the business of a certification organization. And they make that pretty clear here.

And that, in lieu of what was recommended in the LEAGue Position Paper, the issue of communicating to people about the availability of quality courses would be handled as a course registration and information handled by the NCQLP rather than accreditation.

So they've come back and suggested that the recommendations in the Position Paper be consistent with the NCCA, which is the Commission on Certification Agencies, Certifying Agencies.

MR. NEILS: Another comment. I forgot to mention this, probably it's one of the most significant things that's occurred since our last meeting, is that the EIS North America has basically turned over as an in-kind contribution to the NCQLP all of the TKE data. The question bank, the whole TKE activity at the EIS, has been taken over by the NCQLP for the purpose of using it as a basis for the technical components of the examination.

So the technical knowledge exam does no longer exist. And the intelligence that went into that and all of the questions and everything are now the

property of the NCQLP. I think that probably is embodied in our Position Paper to some extent that we ask for that sort of a consideration to occur. And there was a lot of discussion about that over the past five years.

And in my mind that is the most significant indicator, that the activity really is now viable because we have the support of the largest lighting organization in the United States, if not the world, behind the NCQLP.

CHAIRPERSON GRIMSHAW: Not only did they turn over the TKE, but they also brought Russ Churchill back out of retirement to be on the Board.

MR. NEILS: That may even be more significant than the former.

CHAIRPERSON GRIMSHAW: Jim.

MR. BENYA: Well, as a member of the Committee, I'd take us back to our meeting right after Light Fair, to what was probably more fundamental to some of the things we said carefully in the draft position paper back then. We were expressing a fear and a frustration that the NCQLP was staggering at that point.

Those of us on that Committee feel, at least I think I can speak for all of us, feel very strongly that this is one of the most important things that has transpired in our industry to help solve some of the problems even Fred mentioned this morning when he talked about the people who don't know that they're not competent.

Well, we were concerned. And so our first draft of the Position Paper, which is even more strongly worded than the one you see right now, was intended to express our fear and frustration that the NCQLP would fail.

What I think happened this summer, this summer and this fall, through a series of events, of which the donation of the TKE was one of a number, just the hiring of Jackie Callahan to serve as the Executive Director stabilized the NCQLP tremendously. Things that happened at the EIS Conference in Cleveland further stabilized it and worked out some very, very rough spots. Some people left the Board and were replaced with significantly more positive influences, I think, such as particularly Norm and Russ.

And we now have a very, very positive situation, that six months ago I wouldn't have -- well, let's just say I was very concerned. And now I'm very excited.

So, yes, we had something to do with it. Our draft position paper I think made a bit of difference. Our Committee and the LEAGue have made a bit of a difference.

We said, "We're still here. We still believe in you, but please let's get the problems behind us." And I think, if I can report, because I'm into this up to here, I think it's happened. I think it's really turned around so much in the last six months I can't tell you how excited I am.

CHAIRPERSON GRIMSHAW: Jim, any comments?

MR. COLE: Yes. As someone's who's involved in NCQLP on the Board, I am equally as excited Jim. I think the organization has gelled. I think it has a goal. I think it will get there in terms of the quality of the exam.

It does need some financial help at this critical stage. And I think this organization, if it continues to provide strong support and encourages EPA, which got the ball rolling, to continue to support it; to get the Department of Energy; the GSA at the national level to get onboard; so we can help create a market demand; as well as try to get the National Association of Energy Service Companies, which is going to be increasingly a major player in California in utility programs; we need to get these organizations financially behind NCQLP.

There is a fundraising effort led by Joel Sieble [phonetic] with one of the lighting manufacturers. And so I think some of the people on the manufacturer side and other industry players here have got to push NCQLP over the top here in over the next couple of years.

NCQLP needs to make the transition to being a self-sustaining organization. We need to be certifying other parts of the lighting industry in addition to the first certification process. There's a lot of work to be done here. But I think it is an important vehicle. And it needs your support.

You've brought it a long way through your efforts. And you need to help push it over the top. So through your contacts in the lighting industry, let's continue to support this. It has gelled.

MR. SCHWARTZ: I just received a letter in the mail the other day from the magazine that I subscribe to, *Architectural Lighting*. And in there they had a survey that's put out by the magazine. And one of the questions in there, in the survey was, "If NCQLP comes up with certification for lighting, will you take the exam or not take the exam?" I thought that was kind of interesting.

MR. COLE: The marketing effort for the lighting professionals is beginning. And you will see a lot more information about it coming along in the next several months. So it will happen. We hope to at least have 200 people take the exam. I hope we do a little better than that.

CHAIRPERSON GRIMSHAW: It will be given in 20 cities across the country.

MR. COLE: Right. It will be really exciting that they were able to work with other people who are taking exams on the same day and able to increase the number of sites.

The exam will be comprehensive. And it will require education to upgrade your skills in some areas. So I think it's really going to be an exciting process. Help push it over the top, folks. We need your help.

MR. BERRYMAN: You just heard from the Board Treasurer of NCQLP.
[Laughter.]

MR. BERRYMAN: I might add that the Marketing Committee on NCQLP is being led by the EIS Executive Director, Bill Hanley. So Bill is backing up the EIS move to contribute their examination with time and effort. And the backing of a 10,000-member organization is always helpful.

In terms of what we're about today, in terms of getting that information in good form in our Interim Report and into the final report that goes out on what the California Energy Commission -- at what I think is a critical time, because a lot is

there. And, on the other hand, a lot could be lost if everybody let the other guy do the financial backing or passed it off that the financial backing should come from elsewhere.

And earlier Mike had mentioned some things that were products that would be forthcoming from the NCQLP. And I think, if anyone missed the point, it's generally difficult for a government agency to provide a general grant without deliverables; so if there is any support that can be drawn from California and others who are in the same situation.

I know EPRI was -- when they put their funds in, they had to identify something that was going to be done in the certification process that would constitute a deliverable.

So that would be one of the areas we'd be looking for, is recommending the deliverables that would be beneficial in California that would also improve the health overall that the Treasurer is looking at in terms of NCQLP in this immediate phasing out of EPA grants and moving on to things that are coming in from other areas.

MR. NEILS: And just to amplify that, one of the things I talked about was a review course for the NCQLP exam. And the deliverable was a syllabus, or basically what the instructor gives to the students before the class. "Here's what you're going to see in this class." A little pre-class examination that says, "This is the status of the students as they come in." And then a post-class test that says, "This is what the students are doing now."

And so essentially then you can evaluate how well the class did, but you're not right in the middle of asking for deliverables relative to class materials and so on.

MR. BENYA: Well, I'm going to take a little bit different tack on that.

One of the things about a certification process like this that must be remembered is that there is something in it for everybody. The EISNA and other organizations, ALA and other groups, that typically teach classes will offer classes.

There's no question about the offering of classes will be made available in a number of different ways.

I think we need to look to the programs that we've established here through Cal Poly and through colleges, like the one you were talking about earlier, Mike, and other programs, to encourage them to make sure that their programs relate to this and offer a greater breadth of education than just preparing people to take the exam.

I think to the benefit of the people of the state of California, to making sure that the colleges provide greater education than just exam-taking education, is very, very important.

There's one other thing, though, Fred, that must go in the report to the Legislature from us. And that has to do with the -- there's a carrot-and-a-stick situation here that we've talked about many times. And I just want to make sure it's real clear.

The industry is responding to the request to provide certification, national certification, broad certification, a very fair certification, and has answered all of our questions. We, in turn, must ask the Legislature to do what it can to make that certification relevant.

So long as that certification is relevant, we don't have to worry about many other things. If two or three years from now, in order to design lighting for a state of California project, you have to be certified, we will have no problems getting people excited, taking the classes and getting them certified.

If there is absolutely no reason that they have to be certified, other than to have a plaque on the wall, it won't happen. And I guarantee that, too.

So if we don't almost demand that there be requirements that certification be meaningful, we're kind of wasting our time. We'll only have a hundred people take it.

Just like -- you know the TKE was a great first start for the EISNA. But there aren't that many people who took that examination because it had very little

side benefit to it, much less direct benefit. We need something that's extremely important to have, and then people will do it. Guaranteed.

CHAIRPERSON GRIMSHAW: Aren't we as the LEAGue recommending that it is one of the items that the Legislature should consider for programs in the state?

MR. BENYA: Well, I'll tell you. It'd be the number one on my list --

CHAIRPERSON GRIMSHAW: Yes. That's what I thought.

MR. BENYA: -- out of this program.

MR. BERRYMAN: I just highlighted that part of our outline.

CHAIRPERSON GRIMSHAW: Jim.

MR. COLE: Well, I think it ought to be part of our education and marketing program, too, to organizations like BOMA and to other organizations which represent the users. And to not only encourage, as part of state programs, but encourage the private sector to include these as a part of their programs and to encourage the utilities, to the extent to which they are working with energy service companies through the market transformation programs is also to encourage, however those programs are implemented, to encourage the use of NCQLP-certified professionals.

So I think it's not only the state programs. I think it's trying to outreach to BOMA and to encourage the utilities as their programs evolve.

And Energy Commission people will also be very heavily involved in those market transformation programs. And so I think it's directly encouraging those Energy Commission Staff that are involved in those programs to look to NCQLP-certified people.

MR. SMITH: Frank Smith from Cal Poly University.

I would wonder if the NCQLP has been in contact with the State of California Registration Board of Professional Engineers, because as soon as you allow someone to put their little name on the drawings that normally go to a building department for permits, there's usually the domain of a registered

professional, electrical engineer that signs the drawings for electrical lighting.

If you allow someone that goes through and takes an NCQLP exam, you're stepping on the toes of those Registered Electrical Engineers. Are you going to require those electrical engineers to be certified as lighting engineers?

MR. BENYA: We've addressed that pretty thoroughly many times. The intent of the whole process is to simply require, in the selection procedure of individuals who are going to do the work, that someone within that organization who's going to be responsible for the lighting be certified.

That's a different process than he or she who draws the drawing and stamps it and signs it as the electrical engineer. Okay. And what we're saying is if I'm an electrical -- I am a Registered Electrical Engineer in California --

MR. SMITH: So am I, Jim. And I do lots of consulting and I do lots of lighting drawings out there for small commercial buildings. And I don't have anyone that works for me. I do everything myself.

MR. BENYA: And the point is that what we're proposing is that there's a State of California project or, as Jim was pointing out in other projects as well, and you wish to be selected to do that, we're saying that if you're not certified, you won't be invited to be the designer in the first place. That is what we're talking about.

MR. SMITH: My question was: Have you talked to the California Board of Professional Engineers to see what their opinion is on this?

MR. NEILS: Well, basically, Frank, the thing is that if the job requires a professional engineer, you will have to have a professional engineer sign the job. Certification is not a substitute for licensing. And they're very two distinct things.

An architect can be certified as a lighting person and an engineer can be certified as a lighting person. And somebody that doesn't have a license can also be certified.

If we try to create a situation where we had licensing, then basically what we would be doing is shooting ourselves in the foot, because we would have to grandfather everybody that's incompetent into the thing in the first place. So the

issue here is we're going beyond the license, saying here's a certification that demonstrates that somebody is actually competent, they can do it.

And a case in point. Why was the EPA interested in this? They had a large job that they did, a million-square-foot project done by very reputable architectural firm, had all kinds of consultants. Nobody knew anything about lighting. And there are plenty of P.E.s running around. They just did not know.

And I can't explain why the P.E.s in this world have given up lighting. They did. That's why we're at where we are today.

So the solution, in terms of demonstrating to the end-user what you have, is to provide a set of criteria that says, "This is what it takes to do a lighting job. You demonstrate that through an examination." And there is some reasonable assurance that the end-user has that that person has some competency. No guaranty, but better than a P.E., because they're not going to have lighting questions on the P.E. exam any more, Frank.

MR. SMITH: I'm quite aware of that. I teach the exam review course.

MR. BENYA: The answer is if you did a lighting exam and you put your stamp on and signed it, it would be perfectly legal, nothing to prevent you from doing that. The issue isn't preferential selection procedure. It is -- well, I would imagine that it's fairly legal for me to say, "I don't want just any old doctor. I want to have a doctor who's got a certification in the area of my particular problem, not just any old M.D. Any old M.D. could do brain surgery, but I want someone who's certified to do brain surgery."

MR. SMITH: But if I --

MR. BENYA: I realize lighting is not brain surgery.

[Laughter.]

MR. BENYA: But close.

MR. SMITH: But if I read this, what it says here, that they're looking at doing it for state-owned facilities only, it seemed like there's a much bigger opportunity for also commercial buildings and industrial buildings that are not

related to the State.

MR. BENYA: That's Jim Cole's point, about it needs to be -- it's voluntary. The State can say, "Well, we could only regulate what preferential selection for" -- or "a preferential process for State facilities." The State can't regulate that selection process for private industry.

But if everybody gets involved in the process, if the EPA greenlights member companies, the people who are enthusiastic about energy efficiency, *Fortune 500* companies, the federal government, other state governments, if everybody starts saying the same thing, pretty soon it's going to be difficult to get a project if you're not qualified. And the only way you can demonstrate qualification is by certification.

MR. SMITH: Well, I think my point, Jim, is that if we're going to make a recommendation to the Legislature we shouldn't just limit it to State buildings. It should be industrywide.

MR. NEILS: I agree.

And one of the other examples that I could use would be as the utilities move into the deregulated environment and they're offering design assistants or specification writing assistants, or however you want to cloak it, it's design assistants basically, that hopefully in that process that assistance is actually done by people that are competent, whether they work for the utility or whether they work as a consultant or a contractor.

And the utilities are in a great position to incorporate that kind of a requirement within their programs. And I think, if you look at it from that standpoint, the utilities in this country serve everybody. So any job that's large enough for them to be concerned about what their customers are doing, then it would fall into the category of this same kind of recommendation, preferential treatment, whatever way you want to term it.

It's essentially a statement on the part of somebody that has the client's ear, that, "Look, what we're interested in doing here is getting you the best possible

advice that we can give you."

And it can come from somebody that we know has a set of credentials that demonstrates their competence. It's not an unknown factor. We know what that test includes, what they had to do to go through it, their experience and background, education, whatever, of the person that has that certification.

And it will be the only one that exists that has that level of competence, that somebody could have.

MR. SMITH: I attended the Lighting Educator's Conference that was held at the University of Colorado under Dave DeLore. And we had lighting educators from all across the entire world. We had leagues in South America, Australia.

And one of the discussions one evening went until about midnight. And the biggest thing was that they didn't -- no one objected at that particular conference to anyone putting up a certification. What they objected to was putting a requirement on any job that would say that if you want to do this job as an engineer, you have to be certified. That was just a comment.

Whether I agree or not, I'm not saying. But that was just a comment.

MR. BENYA: Well, we expect a lot of comments like that because, Mike, I don't think you disagree with me. Just about everybody who works in the professional design of buildings, architects, engineers, interior designers, lighting consultants, even a few mechanical engineers I know, fancy themselves as being fairly competent at lighting design.

And lighting design is, quite frankly, where the issues that we are all here about kind of, you know, where the rubber meets the road. And one of the -- the fundamental issue here is, "Okay. If you are, prove it." That's what this is really all about.

To me I strongly advocate at this point a certification process. And I strongly advocate the notion of there being some preferential selection procedure.

It is the only way for us to say: If you think you are, prove it.

MR. SMITH: Then I think we ought to be very -- in the document that we submit to the Legislature for the Senate Bill, I think we ought to specifically say in there we "recommend that for all lighting jobs, not just State buildings, that the person that's doing those and signing those particular documents that are submitted for building permits for commercial, industrial and State buildings, that that person have the certification." And I don't have a problem with that. Let everybody be certified. What's wrong with that? Why limit it to State buildings?

MR. BENYA: We've actually been over this territory quite a bit. We feel that, if we require certification in a selection process, we don't interfere with the normal workings of the Architects and Engineers Registration Act. If we do require the person signing the drawings to be certified, we do interfere with that Act and we do interfere with the normal livelihood of the architects and engineers presently certified.

And that was the reason why we made the specific recommendation we did. And I still think it's the right one.

MR. NEILS: The marketplace isn't going to change. We can't overnight say that just because you were a lighting designer before and now you don't have certification that you can't sell your services. That's really what the issue of licensing is all about.

MR. SMITH: All right. One of the things that came up when we sent our first set of students through the six courses at the community colleges was that the students were very disappointed that they did not have the ability to sign off on lighting for any other type of -- just any type of building.

And when you say that, once you put this in, that you're going to have lots of people coming to these classes, I think you're wrong, because you don't have that many State buildings that generate that many people that want to go do State-designed buildings. You have lots more commercial and lots more industrial buildings than you have by State buildings.

So if you want to fill the classes at the community colleges in the state of

California and other universities, you're going to have to make it much broader than just State buildings.

MR. NEILS: The comment I made earlier I'll reiterate it. The utilities are involved with every building that exists on the face of the earth. They have to serve it somehow.

They're involved with getting into the customer side, looking at what the customer's needs are, providing assistance. They're in a position to make recommendations about people that have the competence to do these jobs. Currently they're working with licensed professionals.

There's nothing wrong with them to say a certified lighting person should be on your team. And that's different than saying, "You're a certified lighting person; now we're going to allow you to sign a set of plans." That's a whole legislative process that's got to go through -- a similar process went through with the interior designers.

And the fight that went on with that between the architects and the interior designers has gone on now for 20 years. And there's, to my knowledge, maybe a couple of states that have licensed interiors designers. And yet you've had certified interior designers for that whole period of time.

And it's very similar in the lighting industry. If you want to go get licensed lighting people, you can do that. The cost is you have to grandfather everybody that's been doing it. That doesn't change the marketplace at all. If you --

MR. BENYA: Not for 20 years.

MR. NEILS: Right.

-- if you certify people, then you identify people that actually have the competence, but now you're faced with where are you going to sell this whole thing. And the place you sell it is to the knowledgeable people in the first place, the ones that are hiring services and are not satisfied with the product that they get from that process.

And I don't know whether in today's environment I would use the

word "preferential." But I would use something to the extent of saying, "We are looking for someone who has the competence to do these things. And that would be the recommendation in making a specification for that type of service."

So when the large industrial customer, large commercial customer that has multiple facilities throughout the state and perhaps the nation, goes to select a consultant that they put on that team somebody in addition to the architect and the engineer that really has the qualifications in lighting and can demonstrate them.

CHAIRPERSON GRIMSHAW: Jim.

MR. COLE: Well, I don't see a conflict here. I think there's a specific recommendation relevant to Title 24. And I'm not sure how the rest of the group feels, but I feel comfortable with it. And there's a specific recommendation relative to -- that Frank is putting forward, and that I support also, which crafts some kind of language which the LEAGue encourages people involved in working with users, or whatever, to encourage the use of NCQLP-certified professionals, that you will get a better job.

Now the precise language we'll have to work on in coming forward from this point, but I think we're all basically saying the same thing. Frank from his perspective and a specific recommendation relative to Title 24.

So I think the discussion has been useful, but I don't see a conflict here. I just see working on the precise language, if I'm interpreting your point correctly, as well as what Jim and Mike are recommending.

CHAIRPERSON GRIMSHAW: Thank you.

MR. COLE: Is that reasonable? We'll just work on the language.

CHAIRPERSON GRIMSHAW: Fred.

MR. BERRYMAN: I did not plant that last statement.

However, I had it written down that I would like to hear from Jim Cole on page -- well, it's Item 6 of the outline, and likely recommendations. It says, "To encourage or require use of NCQLP lighting certified."

If you can get to me a couple of sentences, a paragraph, that could go into

our Interim Report that would reflect that addition you had in your discussion about the changing market, the utilities, the energy services companies, and how this relates to how we move forward with this program, that would be great.

And also, Frank, the same kind of thing. If you can look at those couple of sentences and give some suggestions.

Because what we're talking about I relate to our discussion earlier about the residential lighting fixtures. Right now you can't buy them; you can't find them. In the case of competent lighting people, there's a couple around that I know about it, but you can't find them. You can't buy them.

But nobody's going to take the time to make themselves certified lighting professionals if there isn't a marketplace out there.

And what I see this doing is creating enough of a market to get it going so that people look around and say, "Hey, this area I can't work in now because they prefer somebody that knows what they're doing." And eventually it grows. But there are certifications that have been put on the street.

There are tests and so forth that haven't had the marketing tool to go with it. And there's no reason to take it. Those that take it are feeling frustrated that they spent the time to get the certifications. And I think this is what this is all about, is getting that upfront.

CHAIRPERSON GRIMSHAW: This Jim, then that Jim.

MR. BENYA: This Jim needs to -- I was just reminded of something as I'm looking at our draft position paper here that may resolve the discussion we're having here and the differences.

We are actually recommending that there be a regulatory change with respect to signing off the Title 24 energy calculations for lighting. It's part of our draft position paper right now. We're actually recommending that certified individuals, not necessarily licensed, also be permitted to sign off on Title 24 Energy calculations.

This would enable all of those graduates from the community college

programs who are able then to pass the certification examination to sign off on Title 24, independent of the architect or engineer, and thereby making their services more valuable.

CHAIRPERSON GRIMSHAW: Jim.

MR. COLE: Well, I think that's a great idea. I think what I was going to -- and maybe we should have a discussion of that if there's any conflict about that -- but my item was since the Energy Commission has been a strong supporter of NCQLP, and given the importance of perhaps continued EPA and getting the Department of Energy and GSA onboard, I was wondering whether, as part of the Interim Report, we might not ask Chairman Imbrecht or others in the Commission to write a letter in support of NCQLP, generally whether that might be a specific.

I think that would be bear some importance at this critical point in time, if the Chairman would be willing to put together such a letter. And so I would recommend that as perhaps one of the recommendations of the Interim Report.

CHAIRPERSON GRIMSHAW: Peter.

MR. SCHWARTZ: Yes. Just a quick comment. With the statement that Jim Benya just made with regard to signing off on Title 24, I just want to put out the cautionary note that you may want to check with CBCI and other organizations about that to make sure that things are coordinated and you don't have competing bodies fighting for sign-off on Title 24.

CHAIRPERSON GRIMSHAW: Everybody turn to Item 6 on the draft Interim Report. And what we would like to do is to fill up that page with a bunch of bullets. And we're going to try to do this in the next 10 or 15 minutes. We're beginning to run late. Peter over here is beginning to sweat.

MR. BERRYMAN: Five minutes.

CHAIRPERSON GRIMSHAW: Five minutes? All right. If we can do it in five minutes.

Jim.

MR. COLE: Earlier today there was a lot of discussion about the

residential area of the chicken-and-egg issues. And I like Peter Schwartz's statement about nourish the chicken and hatch the egg.

I guess I'd like to see a market transformation program in the area of residential lighting dealing with not only new products as well as perhaps bringing the industry along through a variety of mechanisms that we talked about this morning.

I think I don't want to take the time right now to sort of craft a specific recommendation, other than I think the kinds of discussion we were having earlier, I think, is right on track. And we ought to have something that's market transformation oriented in the residential area. I would like to couch the rulemaking aspects of that under market transformation, because -- rather than leading with rulemaking. I'd be happy to try to craft some kind of language in that area, but I think the residential group has largely done that in their report.

And so I think they have -- I'd like to couch it in a market transformation framework. And basically the kinds of recommendations of the residential group I think are largely in that direction. But I think it's both -- technology pull has an element to it. Though I don't know how you want to handle recommendations relative to Item 6.

They've already made some recommendations. And I think they are a starting point. I'm not sure that's what you were looking for.

MR. BERRYMAN: One of the key things that you've indicated here is to get out of the report, and a headline or a banner that says "Rulemaking Opportunities," and indicate that these are market transformation opportunities that involve rather than carrots, the sticks of some mandatory --

MR. COLE: Well, I view them as elements of a market transformation program as one of the tools that you use to achieve market transformation at the right time. But perhaps rather than leading with regulation, I would rather see regulation perhaps be an element of a comprehensive effort. But maybe you need to do other things first before the regulatory part of the program kicks in.

MR. SMITH: I don't know if this would be appropriate or not, but under the rulemaking, it says, "Opportunities under consideration." I've had conversation with several people here today and also with people here at the CEC, when it comes to retrofitting large facilities, such as Cal Poly University -- for example, we're going under retrofitting right now. Fullerton just did it and Northridge I think has worked on it.

When they do retrofitting they don't always comply with all the control aspects of Title 24. I think it would be appropriate, and there's some good energy-saving opportunities, if the control aspects of Title 24 were incorporated, along with retrofitting, when they do retrofitting of light fixtures.

And there are lots of rules that do save energy, but they aren't necessarily complied with. People go in and do -- they go in and change the fixtures and the lightbulbs in the ballast. And they call it a maintenance. And since they didn't modify the controls in the room, they consider that that's not necessarily required. I think there should be some clarification.

And if it's appropriate for the LEAGue to make some recommendations in that area, I'd like to see some clarification on the rules.

MR. LIEBEL: Who wants to tackle that one?

MR. SCHWARTZ: It seems that -- it's my understanding that they're supposed to be complying with the Code.

MR. LIEBEL: Well, the issue here I think is one of a question of whether the project is done under permit or not. Because if it's done under permit then, of course, it is covered based on what you classify as a retrofit scenario or not. And there are things in the Title 24 Code that do that. But many retrofit situations are not done under permit.

And so what you're dealing with is trying to regulate something that there's no regulating agency to govern, anyway. That's the biggest part of your problem here that you're hung on.

MR. BENYA: But what qualifies you or requires you to pull a permit or

what requires you to bring something up to Code is really the issue here.

MR. LIEBEL: Exactly.

MR. BENYA: Okay. And, correct me if I'm wrong, but Title 24 is about Energy Codes. Any code in general has got some sort of trigger. And I think it's if you change like half of the circuits or something like that in Title 24, is the trigger if you'd have to bring the building up to the Title 24 Energy requirements.

And I think Frank's got a real good point, because -- he's right. A few changes in the language within Title 24 could basically say that if you retrofit more than half the luminaires on a circuit, you have to bring the whole circuit and, therefore, the whole building, effectively, up to Title 24 requirements for lighting. At least, you would trigger the requirement to go back and put in the branch circuits and all that.

The downside of that, of course, is that it would probably negatively affect the retrofit business. It may increase the cost to the point where they're no longer cost-effective. And I'm not so sure you'd want to do that.

But it's a darn good idea to talk about a little bit because energy is saved whenever you do a retrofit. But that opportunity to save energy through controls -- because you go into a building -- I've seen buildings still that are circuit breaker switched. And you go into a building like that, if you had to have the control ingredient, you probably wouldn't do the job at all in some cases.

MR. LIEBEL: I think the suggestion here, since that's not a bullet, that's really about a half a day's or a day's or several PAG meetings. The thing that you might want to do here is just make the statement that says that there should be a review of the Title 24 requirements for retrofitting and commercial, industrial and institutional types of projects.

MR. BERRYMAN: Okay. I had written down "evaluate the triggering cost-effectiveness analysis," because this was gone through at times when strategies that are out there for control now might make things that weren't cost-effective in 1982 much more cost-effective now.

So these have all been looked at. And we've, in fact, backed off from some requirements because it was damaging the retrofit business. There were certain things that were very costly. And we were triggering them with the earlier standards. The '78 Standards triggered things that were not cost-effective, and there were changes made.

But the bullet is to review the -- or evaluate the triggers for retrofit against -- it's primarily controls and what the controls would cost to come up to Code. And they may be significantly different now than they were.

MR. NEILS: I don't know how specific these bullet points want to get, but I think on the residential side, as going back to that, I'd like to get back to some of Jim's comments. And maybe the bullet points are simply stated that, "Identify new regulations in Title 24 on the residential side to be implemented for the next Title 24," which is in '98.

Fred, is that right?

MR. BERRYMAN: Um-hum.

MR. NEILS: And then also identify those things which we should target for the following submission on Title 24, which would allow the companies, the manufacturing companies to know that during the next three years that these things are going to be coming along.

And so I think that we identify those two sort of arenas, if you will, of how we're going to target these types of regulations, one for immediate and one for the next three years. That allows a good phasing in.

MR. NEILS: Brian, do you want that to be broad, or do you want to say "efficient equipment, controls," or is there any guidance that you want to give?

MR. LIEBEL: Not having been involved with the discussions to date, I feel like I'm out of LEAGue right now, Mike. I think Jim has the best sense of that.

But I think you have some recommendations that have come from the Residential Committee with regard to the garage lighting, as an example. There was a comment on the closet lighting. There's a discussion on the outdoor lighting.

Those three things seem to have been targeted already from the Residential Committee that might be things for the upcoming one as fairly simple to institute. But then following year you might look at the bathrooms and some of these other applications.

So that's my just gut reaction to it at this point.

CHAIRPERSON GRIMSHAW: Didn't we also discuss kitchen lighting?

MR. GERBER: No. Kitchen lighting has been covered.

MR. SUGAR: I have a question regarding residential lighting regulation, which arises from the discussion at the last LEAGue meeting. There there was discussion of setting efficiency standards for residential exterior lighting.

The State, in setting regulations, has two options. One is Title 24 which relates to new construction. The other is Title 20. Those are appliance regulations. They apply to all -- would apply to all fixtures sold in the state.

When I raised the question on the exterior lighting regulation, as to whether it would be appropriate to have that for new construction, a couple of ALA members there stated that, as I recall and looking through the transcript it seems to bear it out, stated that this was too small a market to really drive the availability of efficient new fixtures. That, in fact, retrofits are a very large part of the market. And in order to really drive the market toward efficient fixtures, it would be more appropriate to have a regulation which applied to all new fixtures.

And we discussed this some. And I tried to confirm it with the group, because I didn't want us to go ahead and bring something like this to the Commissioners and then later have industry representatives say that, no, we misunderstood, which is always possible.

And so that's where it was left as of the end of the last LEAGue meeting.

The new residential report is coming out suggesting that it may be appropriate to regulate fixtures for new construction, but specifically stating we should not regulate fixtures in general for exterior purposes.

In order to better word or phrase the material in this report, I'd sure like

some clarification, because we want to go forward with something that reflects what it is saying.

CHAIRPERSON GRIMSHAW: Peter.

MR. MILLER: Peter Miller with NRDC.

I'd like to support the idea that we should look at regulating all of the exterior fixtures that are on the market. Clearly the retrofit markets are a much bigger market than just new construction. And we're not talking about different fixtures. We're talking more toward luminaires. We're talking about different sales outlets, really.

And so I think it makes a lot of sense to at least take a look at a standard for outdoor fixtures, outdoor residential fixtures.

MR. KARP: In general, total?

MR. MILLER: Yes.

MR. KARP: You've got so many different types. This is for one. Would you like to see something like this go into effect?

MR. MILLER: Well, the Title 24 proceeding that's currently underway is pretty well advanced. So for the new construction that have to move pretty quickly.

I don't think there's an established schedule for Title 20. And so there's really no instant urgency, but I think it should be looked at as soon as possible. And then I think it is a minimum three-year delay before that would actually take effect, after it's passed.

Is it three years, John? Do you know?

MR. SUGAR: There is a delay. And it can always be specified in the regulation, as well.

MR. NEILS: Now that we're talking about this subject, I'd just like to make one point to get it on the record here.

If you do a fixture efficiency or luminaire efficiency kind of a standard, then basically I think there's a couple of aspects you need to consider.

One is the whole aspect of control from a luminant standpoint, the control of the luminaire so that it actually controls the light output to be restricted to the areas that that particular property needs to light. So essentially a glare standard I think would be good, something that says that efficiency is not only it, because, if I'm not mistaken, an open lamp fixture luminaire is really the most efficient that we can find. So --

MR. BENYA: A bare lamp.

MR. NEILS: A bare lamp, okay. And that's a problem with efficiency standards in lighting as opposed to air conditioning.

So having some kind of visible control of the light itself I think is important.

And then the second piece of that would be efficacy. So what is the output per watt or the luminaire efficiency type of aspects.

So I'm going to just put that on the record, and leave it at that.

MR. LIEBEL: One of the things, just to interject one opinion on this outdoor lighting thing. I'm not so sure that if we think about the outdoor lighting that a luminaire specification or criteria is the best way to address it.

Essentially the outdoor lighting, the reason it consumes so much energy is because it's left on during the day. And that's where the 11 percent -- Lisa is shaking her head no? Tell me, Lisa, then.

We -- yes, I'll be wrong.

MR. BENYA: Come to a microphone, Lisa.

MS. HESCHONG: A very small percentage are left on more than 12 hours a day.

MR. LIEBEL: Okay.

MS. HESCHONG: And that's in the report.

MR. LIEBEL: Okay.

MR. NEILS: Brian.

MR. LIEBEL: So the controls aspect of it was what I was going to get at,

though, that the controls aspect might be a good way to deal with the outdoor lighting versus a specific fixture type. And I would look at that.

MR. BENYA: Jim Benya.

I think the reason why we raise the issue of controls as opposed to Mike's control, which deserves some discussion too, is that outdoor motion sensors, for example, are a sensible form of control. But they're not necessarily very appropriate sometimes with high efficacy sources, given the warm-up times you have, even with compact fluorescents in an outdoor environment, assuming that they'll even start and that they've been designed accordingly.

An instant-on, full-brightness source, namely halogen, may be a more appropriate source with a motion sensor. I think that's part of that discussion.

The fundamental issue here is efficacy, I think, as Mike put it. But we ought to give some thought to photometric control for the simple reason that, even as it's stated in the report here, that unwanted light trespass is an issue that is not well dealt with most of the time in residential lighting. And maybe it should be. Maybe that's something that could be resolved as part of this. I don't know.

I mean we could say with no difficulty, "Light trespass is wasted light." So perhaps it is wasted energy.

MR. BERRYMAN: I'd like to interject here. I think we're going to have to move, because I could use a lot more bullets, maybe one to the head if I try to write this. But this latest handout was from LRC. And Russ Leslie indicated that to feel free to share this with the LEAGue.

I would like to ask those people who are here and individuals who are here that are not LEAGue members to help us honor his request. Because if you open it up it's "Do not cite, duplicate or distribute."

This is a draft specification that indicates I've reviewed it, and there's not time today to review it here during this meeting. But it appears from my review to be an excellent report, one that represents -- has had a good deal of thought put into it and addresses a lot of the questions that will come up with

issues, if we were to get into this process.

So it's not -- LRC has done this linked with a lighting transformations program, and so forth, that I believe was tied with the EPA work.

But, at any rate, I would ask that those that have the copy of this that I passed out or that was passed out would help us honor the request of LRC and contact them for a copy of your own.

And I commend this to those who are on the Residential Committee, the whole LEAGue to review this and see if my opinion is -- you didn't get a copy at all?

MR. DAIBER: No.

MR. BERRYMAN: Okay. I'll give you mine.

But I think you will find that this is a pretty thorough investigation of the potential opportunities. And there's some, I think, rather innovative approaches to how to categorize and how to look at the efficiency of outdoor lighting fixtures. I think it's a good job.

And I would --

CHAIRPERSON GRIMSHAW: If you would come to the mic.

MS. HESCHONG: I will come to the microphone.

Before we move on, I wanted to add a little bit of perspective on the retrofit-versus-new-construction discussion that we were having a few minutes ago. This afternoon we're going to present the results of the modeling scenarios.

In the residential it shows that a retrofit approach, which would be a Title 20 Appliance type standard or some other market approach, tends to be 5 to 10 times larger in impact over 15 years than a new-construction approach, even when you assume perfect penetration on new construction. So just keep that in mind.

We'll also be comparing the difference in magnitude between commercial and residential, different scenarios.

CHAIRPERSON GRIMSHAW: Peter.

MR. MILLER: That sort of comparison suggests that it might be, in fact,

a very good way to prime the market by starting with the Title 24 new-construction market as a way to get things going and then moving to a Title 20 standard and getting the rest of the market.

CHAIRPERSON GRIMSHAW: Let's move on to the *Advance Lighting Guidelines* at this point. And we're going to ask them if they can reduce their time to about a half an hour.

MR. LIEBEL: Make it 35 minutes.

CHAIRPERSON GRIMSHAW: Thirty-five minutes. We'll negotiate. So let's move on to that.

Thank you, Sy. Give our best to Bernie and hope he gets better.

MS. SPENCER: Some of us have not received the Report that was apparently mailed.

MR. SCHWARTZ: Jeannine's got some additional ones.

For those of you who had an opportunity to look at our proposal and for those of you who just received it, I wanted to answer the question of why is PG&E interested in doing this. I understand some people are wondering that.

PG&E, as a part of their Customer Energy Efficiency Programs, are involved in market transformation programs. And after a little arm-twisting by Fred, of course he ducked out of the room for this one, he came to us and said, "Hey, would you like to throw some money into updating the *Advance Lighting Guidelines*?"

And he twisted my arm pretty good, and we said sure.

And after getting into the project a little bit, we looked at it as an opportunity to really put some additional funding into it, make it a much more comprehensive effort, happening much earlier, than waiting around for the large partnerships that can occur between DOE, EPRI, the CEC and other utilities.

So we at PG&E decided that we'll get the effort out the door and up and running. And then as other collaborative funding parties have their money available or however long it takes to contract, then we can add that funding in to

further develop the product.

The presentation that Brian Liebel is going to show you will get into kind of new era, I think, for the *Advance Lighting Guidelines*. The attempt to take it from a hard copy form into what we hope to be a very useful electronic for either via Website or CD ROM or both.

And the reason we're sharing this with you today is we're really interested in getting your ideas and recommendations with regard to the format and also in terms of contributors. We're looking to make this a widespread effort, both in the production and also in the distribution.

I think we all recognize the importance of getting as much good information about good lighting design out into the marketplace. And I think this is something that could really turn into a national product and that the industry hopefully will accept.

And with that I'm going to turn it over to Brian.

MR. LIEBEL: Thank you.

First of all, I just want to mention for those of you who do not have one of these, you can get one. Jeannine has some more over there. Anybody does not have this and would like a copy, please raise your hand.

What we've done with this is to come up with an outline format that we'd like to think is a very good model to look at for the *Advance Lighting Guidelines*.

First of all, I think it bears some saying to talk about the history of the *Advance Lighting Guidelines*, what it has done for this industry, and the landmark, if you will, the status it has achieved throughout the time that it's been as part of the Energy Commission's and the State of California's leading role in lighting energy efficiency.

And to the point that it has been -- let's say in 1993, a lot of the things that were developed in there were to educate people about the types of products that are there, educate people in the ways that they were used.

And I think that at this point in time our goal in this is going to be to continue that and update it with that kind of information, but also to provide some new ways of selecting products and ways of looking at things and providing interactive media.

And I'm going to give a couple of demonstrations of this as we go through.

First of all, in this document, however, the way we've divided this up is into different sections. And each section has some what we're calling modules, very discrete bits of information, so that people can find their specific thing that they're looking for, hopefully very easily, through a concise menu-driven way of looking at it. And we'll show that in the computer in a few minutes.

But right now what I'd like to do is drag my cord over here and give you a little bit of an outline of the way we think of the structure of this.

And what we've done is to take a look at the existing *Guidelines* and what it has in terms of its information, and think of other things that would add to it in terms of its usability by the lighting profession. So, as an example, there was a section on lighting design practice, which you can follow through with this actually in your booklets.

There's a section on lighting design practice which we plan on updating and expanding.

Then we were thinking of a section on codes and regulations, which I think would be a tremendous thing to try to consolidate the different codes that we have and how we use them in lighting, including life safety issues, UBC, NEC, energy, the ADA, disposal regulations.

There's a whole body of working codes that we, as lighting professionals, would like to get our hands on. And to provide that in a single-source place would be a great idea.

A section on lighting economics would be a new section to talk about life cycle cost analysis, and also to add in the issues of productivity and the cost of

doing bad lighting.

Computer-aided lighting design, updating and expanding that section.

Adding a new section on building monitor and data acquisition, which is essentially a way of validating and predicting the economic viability of certain lighting solutions.

A section on lighting commissioning. That would be new.

Daylighting is expand and update.

Sources is an update of the existing sections that are in the *Guidelines*.

Ballast and transformers, to update that and expand that. There's been a lot of updates in technology since 1993.

Taking a look at luminaires and lighting systems and updating and expanding that.

Adding something on the environment, the luminous environment.

Talking about maintenance issues and the way we doesn't in space.

Control sections, update and expand.

And then the lighting surveys and retrofits would be a new section, although there is some controls items in the 1993.

Now if we take a look at this body of work, which is mainly what I'll call the educational portion, which teaches us about how to do things and tells us what products are available, what we've done is identified within these different headings the core material that we feel is important to try to educate people and bring to fruition in terms of how they can find products and work with products.

Once we know what we want to teach people, then we've identified what kinds of lighting fundamentals are going to be required before you can, in fact, address these issues. And all of these fundamentals then get transferred into a single module at the end, which is called, "The Lighting Fundamentals Definitions and Terms."

So that we essentially outline the core for those people who are in -- active in the practice and know some of what they're doing, but we allow for those

who haven't been there so long to find what they need in a reference section.

So we've got the core material. We've got the fundamentals as backing up the core material. And then we go into two other areas, which are called "Guidelines" and "Reference Materials." And those are summary charts, how to specify products, how to maintain products in a guideline format, so it's easy to sort of get through in those guidelines.

And, finally, identifying those things that we might be able to use as interactive media and tools in helping us select it online in a very interactive way.

I'll show you an example of one program.

Then two other sections that we added, which is an area which will be a resource area where you can find places such as educational institutions, where you can find lighting-related publications, lighting related organizations, those other organizations and resources to get material on lighting.

And another section on lighting research, which has to do where research is going on, what kinds of research is going on, and so forth.

So this is the way that we've structured this at this point in time, identifying the core material and then the fundamentals, the guideline opportunities and then interactive media.

So what I'd like to do now is to present to you a little bit of a synopsis concept of how this works on the computer.

So in concept then if we have this interactive media, the computer which of course allows us to learn in an omni-direction fashion, which is really very good.

One of the things, as you look at the way this thing is structured on the wall, is that if we -- you can learn in very many ways. One is that you could say if we're going to talk about sources, well, there's tungsten halogen and compact fluorescents and full-size fluorescent. But then in order to get to the ballasts, that's over in this section.

And there's two ways of looking at it. Either you want to learn about all

the sources or we may want to learn about a particular source and everything there is to do about it. So we may want to learn this way rather than this way.

And the computer allows us to go where we want to go in a very quick fashion. So let me run through a fairly quick example of this. Let's say for our example that we wanted to look at sources. And under the Sources we have our different headings: The tungsten halogen, compact fluorescents, full-size fluorescent, et cetera.

And let's say we wanted to go to full-size fluorescent lamps and learn about those. And what we've done within each of these -- or what we are actually in the process of doing within each of these modules is coming up with an expanded outline. And within the expanded outline there will be an introduction of what is the state of things in terms of what we're going to cover, what recent improvements have been, current trends and future enhancements.

Then we go into the core material. And so we talk about the lamp operation, factors affecting the lamp operation, certain attributes.

And let's say as an example we go and we want to learn, and we see that dimming, maybe we want to learn something about dimming, which we could click. And then it automatically goes to full-size fluorescent dimming and step control.

So what this kind of media does is it allows you to go to these steps very quickly based on where you are learning. It's like when you're in the process of learning and you have to go find the index in a standard book, right? And then the index refers you to another section, always having to go back and forth. The computer allows you to go in many different ways very quickly.

So let's say, as an example, we wanted to go to ballasts, full-size fluorescent ballasts, very quickly to get to that section.

Conceptually the idea that we've done with this presentation is to have the table of contents there present because what that does is allows you to know the context of the whole document, which I think is pretty strong.

And then as we get to, let's say, the bottom of the section and we get to where we are at the end, then we might have a section called "Next Links," which are the next logical links based on what you've just been presented with. And so you can go easily back and forth between each other.

Now to show you then an example of the power of the computer of one program that we've done and the ability to select things. And I think that this is a kind of a tool that would really make this very powerful for us.

This is program that we worked on for PG&E that is a ballast selection program. And let's say, as an example, that what we wanted to do is to find out how many -- or to select, let's say, two lamp ballasts for F32 T8 lamps. Okay.

And let's say, as an example, that what we're looking for is a high output ballast, just for grins. So let's say a ballast factor of at least -- and we're having to run this on a little slower machine because of the projector interface here. No, it's getting there.

So let's say that we wanted to then select a high output ballast. So we're going at least 1.1 ballast factor. And now it's going to think about this.

In this particular ballast program, what we are doing is we take the independent test lab reports from the manufacturers. We input that data which goes into an access database. It then gets downloaded into this, which is an Excel spreadsheet. So none of the raw data is accessible at all. This is all average data based on independent test lab reports. Right now there are about a thousand of them in there.

And so, as it's conducting this search, what we should do or what we should be able to do is find out, in fact, who out there makes two lamp T8 electronic ballasts with a ballast factor of greater than 1.1. And I believe that's our results.

So you can see, as we go through this, that we have a list of manufacturers -- went too quick. And there are a number of them there that you can pick. And let's just say, as an example, that we wanted to sort it by the highest ballast factor. So we go to a sort function, ballast factor. We'll put the top one on

top. And this then will sort it.

And now we find out that the highest ballast factor is a 1.3, and then it continues on down to 1.1 minimum. So it's a great tool for selecting products.

And one of the other things that we've done with this, just to give you, again, sort of an example of some of the power that the computer can provide, we can run statistics functions.

And one of the things I know that has been of interest within this group is coming up with real average data for lamp ballast combinations. And when we run the statistics we find that out of this thousand ballast database that there are 13 of these ballast, lamp ballast combinations, two lamp T8 electronic ballast greater than a 1.1 ballast factor. And we have minimum, maximum, mean, median standard deviation. So we can, in fact, come up with a fairly reliable method of coming up with average values.

So it works if you are a practitioner trying to select a particular ballast and know what products are out there. And let me just -- in terms of the technical data that is involved, we'll just run that search again. It should show the same thing.

We have, as you can see, the ballast factor, the input watts, the BEF, a system efficacy power factor, total harmonic distortion, the frequency of operation, the lamp current crest factors involved in here and a lot of other things.

That's the type of level of interactive media that would be powerful. And this document could make it quite revolutionary. And we are hoping that we can supply a lot of these things to make the next *Advance Lighting Guidelines* a truly powerful tool.

So with that little presentation what we are hoping for is that for all of you that have one of these documents that you would be able to take some time, look at the way it is structured and outlined and the content that is in it, and provide us really two forms of input.

Number one, which is what other types of things do you feel would be good to include in the outline that we have.

And, secondly, who do you think would be good to help us in this venture, because we really do want to make this a venture where we have as many contributors as we can in providing us with the information. And there's certain people out there that have a lot of good information that can be very instrumental in making this successful.

So we're looking forward to your feedback. And for any of you who don't know how to get ahold of me, then please talk to me during the break and send your comments here. We've already gotten our comments, by the way, from Peter Bleasby. So we're looking forward to getting your comments as well.

Is that the 30-minute, abbreviated version, Norm?

CHAIRPERSON GRIMSHAW: Less than 30.

MR. LIEBEL: Oh, boy, we did great then.

CHAIRPERSON GRIMSHAW: But Peter needs his minutes.

MR. SCHWARTZ: I guess what we'd like to do is, if you have any questions at this point, to let you ask those and we can address those.

Also I want to reiterate that we are interested in getting your comments. And I think probably the best way, in terms of moving forward on this effort, is to get those in written form. And I think in that way we can better address them.

Francis.

MR. RUBENSTEIN: Francis Rubenstein, LBL.

I read over the outline quickly. Unfortunately not as much as I might have. As one of the, let's see, four alumni -- is that the right word -- from the 1993 *Guidelines*, perhaps some of our experience might be useful.

One thing is that the idea of making a Web base I think is excellent. I mean that's clearly the medium of the future. That's obviously the way you want to go. I don't think there's any question about it. It also is a much cheaper way to disseminate information than it is printing out lots and lots copies of booklets. And I say that from experience because I had 2,000 of these on a loading dock, so I'll be out trying to find a home for them. A big problem.

I have concerns in certain areas. The question of whether or not you go to a different format, I think, is a different issue from basically the content itself. You're proposing a very large increase in the amount of content.

MR. LIEBEL: Um-hum.

MR. RUBENSTEIN: And my experience, from having done the 1993, my input on the *1993 Guidelines* is that that was a lot of work. It's a great deal of work putting together good material. I mean we had some major knock-down, drag-outs with Jim Benya, who's turning his back on me right now, on certain pieces basically where we had a very hard time reaching closure. And it was a relatively small group of folks, but all with all big egos, admittedly.

So I'm concerned that basically that the scope has gotten very, very large. I just wanted -- I think that's one important issue to think about.

Finally, I want to address the issue of funding, which clearly is a critical one. I think it's great that basically PG&E and Peter Schwartz have come to the table indicating their willingness to fund the 1997 revisions to the *Advance Lighting Guidelines*. I think that's great that they're taking the lead on that.

But knowing, at least having some idea basically of how much things costs, I'm concerned basically whether the money is, in fact, there to support tripling the content.

My one other point is that I don't think that tripling the content should be a criteria. It may be a result of what you're looking at.

MR. LIEBEL: Exactly. That number came from a result of actually expanding the outline based on what we saw as things that would be very beneficial to the lighting community, and that was the criteria, what are those things that would be very beneficial to have as material to be added to the *Guidelines*.

Now keep in mind right now our process is to expand the outlines of these modules so that we have a better idea of content for many reasons.

Number one, to find out what we're really talking about scopewise. We may, in fact, find that, depending on where we are schedulewise, how we're going to

schedule this across a time period, that maybe some of these things aren't going to be implemented right away. But, of course, that's part of the beauty of Web site kinds of things. You can add these fairly easy or a little bit as you go on.

The other thing is, what you've talked about, is budget. And so right now we're trying to go through this in a fairly systematic approach by expanding the outlines to determine time and money. And from that point we'll know better where we're going to be landing.

MR. RUBINSTEIN: So what you're saying now, and if I'm reading between the lines here, is that in essence the budget is not determined. You're working basically, trying to figure out what material makes sense and then basically you want to see basically whether this is a champagne diet on a beer budget.

MR. LIEBEL: I think that's right. Peter might be better to...

MR. SCHWARTZ: Yes. What we're looking at right now is to further get a better handle on the scope and see what kind of money is involved and also the timeframe, because our goal is to get something out rather quickly. We're looking to put up enough money to get a substantial effort to get something delivered in a short timeframe.

And we recognize that this is a very large project and are funding it appropriately. I think that may answer some of your questions.

But, once again, we're doing it in this fashion, in a modular fashion, so that if it needs to be phased and we need to get additional moneys from other entities to complete some of the other modules, that the project won't suffer because of that. So we can have a complete deliverable at the end of each phase.

CHAIRPERSON GRIMSHAW: Jim.

MR. BENYA: I'd just like to raise an issue that Brian and I have already gone over about this. And the one concern I have, other than some of the ones that have been raised here, has a little bit to do with that process and those egos that Francis was talking about.

The clashes of egos was really not so much a clash of egos as it was a

small group of people who represented sort of a breadth of the industry, attitudinally and professionally and otherwise, arguing out the issues and getting them worked out ahead of time, so by the time they hit a public review process, that there weren't too many things left to be ironed out.

It was a clash, all right, because we were coming from different points of view, and we had to find the common ground that sooner or later the public would find.

The concern I have about this document and the timeframe is that this is an effort -- I just told Larry -- probably should have done by the IESNA by now, anyway. And I'm disappointed that the IESNA handbook is not what you've recommended.

Oh, we'd have to add a few things, but it's -- as far as the IESNA handbook is concerned, some of this stuff replicates what is in the handbook. Some of it is in things and in a format that, with any good fortune, maybe the ninth or tenth handbook we'll be doing, too. To a certain extent we're already doing it, but not as ambitiously as this project.

Let me warn you, my biggest concern about this is that process of discussion and those clashing of points of view in the public review process. What has set the *Guidelines* apart, regardless of who funded them, regardless of who did the work, what has set them apart has been the consensus buy-in, not just of those of us who worked on it, not just those of us in the ALPAC, but really the industry as a whole.

And if you try and do something like this too quickly, you run the risk of having something that's buried in one of those sections being your opinion or my opinion as opposed to something we've all pretty much bought into.

And I think we need to address that almost more than anything else, because that is the one thing I think that sets the *Advance Lighting Guidelines*, that these are going to be called the *Advance Lighting Guidelines*, to me they need to represent a consensus document, not a contract document, which is where we could

be headed if we're not careful.

MR. SCHWARTZ: Point well taken.

CHAIRPERSON GRIMSHAW: Gale.

MS. SPENCER: I think this looks like a really great asset to the community, to the lighting community. My biggest concern, in addition to the ones that have already been mentioned, which are very significant, is target audience.

The *Advance Lighting Guidelines*, if I recall back to when we came up with the idea, was intended to be available to every man, every woman, anybody, and be at a level that the common people on the street, the guy who's changing the lamps at the local business, everyone could understand these. And this to me is appealing to the lighting professional, but it's not appealing to the guy on the street that we're trying to educate about what's out there and what's new.

I see this as something that should be done alongside but not replace the *Advance Lighting Guidelines* in the context that we've been developing. I see them as two different things applying to totally different groups of people.

MR. SCHWARTZ: I think the beauty of electronic media is the ability to come in at various different levels. Excuse me.

MS. SPENCER: The problem is if you're doing this on a Website, what's the percentage of the population that has access to the Web right now?

MR. SCHWARTZ: Right.

MS. SPENCER: Ten, 15 percentage of the total population? If you do it on CD ROM, is the maintenance fellow down at that 16-story high-rise down the street, is he going to have access to CD ROM? Maybe not.

To me this is too difficult to get ahold of. You haven't mentioned -- of course it'll depend on costs and everything else -- this is obviously not going to be a give-away. Right now what's charged for the *Advance Lighting Guidelines*, well, EPRI gives it away --

MR. AYERS: To their members.

MS. SPENCER: -- to their members and --

[Laughter.]

MS. SPENCER: That's true. It's still a give-away to members. And anyone can --

CHAIRPERSON GRIMSHAW: We give ours away.

MS. SPENCER: -- buy it from the Energy Commission for, what, 10, \$15.

CHAIRPERSON GRIMSHAW: Ten.

MS. SPENCER: So it's almost a give-away. Nobody complains about spending \$15. Usually when you get to CD ROM and this kind of -- it's going to be a large ticket item.

There might be portions of this that the guy on the street can use, but he's not going to have the technology and he's not going to be likely to access it.

MR. SCHWARTZ: Yes. I think a lot of your questions would have been answered in our full presentation --

[Laughter.]

MR. SCHWARTZ: -- as opposed to the 35-minute one.

Because some of the things we wanted to talk about are: Well, how do you market this; what kind of avenues are taken; what kind of market research are we doing to discover what's on a design professional's desktop. Do they have CD ROM. Do they have a large monitor or a small monitor.

One of the things we wanted to talk about is the fact that we would have a hard copy version that by default would be a subset of any multimedia or electronic version.

We would have talked about co-marketing the CD ROMs with manufacturers and linking catalogue information to the *Advance Lighting Guidelines* so that, if you're looking for specifics about a particular product, you can either link to their Website or some other document or some catalogue.

Some of the struggles of, if you give a CD ROM are they going to actually look at it. All these questions. You asked all the good questions.

And part of this process will be to look at what is the best way to

distribute this, what's the best way to get it out there and leverages its use within the marketplace and to really begin to transform the market.

It's interesting that you said the *Advance Lighting Guidelines* was more for the every man. We got some feedback from Karl Johnson which seems to state the opposite, that the *Advance Lighting Guidelines* was more for professionals and to stay away from fundamentals and things like that.

So our idea here was we're now at an opportunity to take existing material and to put it in a new media so it can get wider use. We're looking to make this as widespread as possible, to have as much good input as possible from the industry.

I think it's really important, I really take Jim's comments about consensus building to heart because without buy-in this thing is going nowhere. That's obvious on anything. So our intention is to get as much help as possible. And we're providing funding.

MR. LIEBEL: I'd also like to approach one thing that you mentioned, Gale, which is a target audience. And I think, as I've thought about it and looking at the *Guidelines* and how it's directed, which is essentially an aid to find the information that you're looking for, that the target level, in terms of its writing style, if you will, is not going to be, necessarily going to be very technical, per se.

I think that what we want to do is have these things in a fairly concise manner so that people can find the information, on the assumption that, let's say, they know what a source is. And based on that, then if they need more fundamental information, it will be in the document.

And that's a very big part of what we provide because, as you look at the *Advance Lighting Guidelines*, the fundamentals of lighting are in there interspersed within the text of it. But if you wanted to find it, you'd have to know where it was. And that's sort of a bit of a distinction. But I don't think that, in terms of the writing style or the purpose, it's going to be way up here, if that's your concern.

MR. BERRYMAN: I would interject. From I believe a meeting that was

held with Charles Eley and Francis, Rudy and Jim regarding what we were doing with the original *Guidelines*. And I think we accomplished it because we hit both levels. Karl is right and Gale is right. I wish I could remember the particular distributor or electrical wholesaler where the ballast module was dogeared along with a lamp module on the counter being used by the guy on the counter, who was dealing every day with inquiries and requests relative to lamps.

One of the things that was going on, when the original group looked at this, was there was a lot of misinformation, misrepresentations of products in the basic areas of lamps, ballast, how they perform, thermal effects and so forth, that were leading to a lot of claims for energy savings. It was screwing up the energy market.

And one of the goals on this was to get a mechanism whereby the quality people in the field would get together, produce a document, run it through both peer review with the ALPAC, then public review where we got comments from the public on the content of that document, and published it as essentially a generic information of very highly technical stuff and also some very useful material for the guy on the counter.

And what I think has made the *Guidelines* the kind of document that it is is that, and this is pride in what the Commission did, was the Commission afforded the opportunity for the various public processes that this went through.

So one of the things that I would feel is important is to present this and bring this forward in chunks or pieces or modules that are manageable in the public process. If we bring in this the IES handbook for public review, something immense, it's not going to have -- I mean I wouldn't be confident, looking at that document, saying that, "Well, I know this has been reviewed in a general public situation amongst the manufacturers and people who have signed up on the list as interested in lighting." So I think that's one of the challenges.

This is a great package of -- but a lot of new material. And it's a different concept. I remember wanting to have certain things included, and I was not always

a winner. I'd get in the workshop discussions. And Benya's taller than I am. And he would tell me, "No. You're stepping outside of the goals."

And I think, as we go through this, in looking at upgrading the document, that we need to have those kinds of discussions.

And I also want to compliment the group. There's a lot of work that's represented here, front-end thought, that gives us a lot to discuss and a lot to look at.

And, at the same time -- we're talking about what I am pleased with -- it is one of the most successful documents that's been out there. People have identified the *Lighting Guidelines* as something very worthwhile. And I didn't write them. I just complained or wrote little notes on what was in there. But I want to compliment the team that was the initial inspiration for this, Francis, Rudy -- who's not here -- Charles Eley, Tom Tolen, Jim Benya. And all -- NEMA did a fantastic job in bringing the documentation into their organization.

So if I could inspire anything, it would be to continue that kind of process.

The other thing that's part of this is that it was initially a Commission move. And the Commission initiated this project. And then we were broke, as usual, when it came time for issuing a revision, and we couldn't charge for the document any more than it cost to print it. And so we can't accumulate any funds for revisions.

And at that point in time EPRI had funding and the Department of Energy had funding that went into the process and became partners in this. And I notice in the letter that Karl brought the recognition of this.

And I think that it's also important as -- you know, we don't have to resolve things here, but at least state that we're going forward with a similar kind of public process and involving and assuring that the partners we have and the new partnership that PG&E would provide with the leadership and funding that has gone into producing this outline, that we would see the project go forward and try to maintain those past benefits.

And I don't know, Larry, would you want to go over what Karl had written here, or do you...

MR. AYERS: I can review a couple of comments if you think I need to. Did you hand this out to everyone?

MR. BERRYMAN: Oh, yes. Everyone has a copy.

MR. AYERS: Okay. I mean I can read it as well as other people can.

MR. SMITH: Larry? This is Frank Smith from Cal Poly University. A comment on the second page there. In regards to what Fred had to say, a copyright, I guess, when you put it together. What will happen in the regards to copyrights to the new and updated manual?

MR. LIEBEL: Yes. Well, our intention was that this was a public domain document.

MR. AYERS: The previous *Advance Lighting Guidelines* is not copyrighted.

MR. LIEBEL: Yes. And it was our interest to continue that. Like I said, as widespread a distribution as possible.

MR. SMITH: Well, the comment that Karl Johnson had made, he said that the proposal would affect the rights of all participants of the *Advance Lighting Guidelines*. I don't know what those rights are or were.

MR. SCHWARTZ: I'm not sure what he's referring to there also, unless he's --

MR. AYERS: It is somewhat vague.

MR. SMITH: Because most -- at least I've been invited to write on different reference manuals used in the colleges of engineering throughout the country. And usually when we contribute to a reference source, we give up all rights to copyrights as contributors. So we simply get a byline on the front page saying we are a contributing editor of whatever, and that's it.

MR. DAIBER: Unless this is just -- a lot of times I know my company, and probably PG&E, typically when something is published it is automatically

copyrighted. And Karl may just be alluding to that. And Peter is kind of --

MR. AYERS: Yes. And there have been other lighting documents in the not-to-distant-past that were prepared by one contractor or another, and they have been copyrighted by that contractor. So it's a question: What are the plans for the rights to this document.

MR. DAIBER: I think we just heard it.

MR. AYERS: And then I think you said there --

MR. SCHWARTZ: Public domain.

MR. AYERS: -- are no plans. It will be the public domain.

MR. SCHWARTZ: That's right.

And when you look at trying to make this as successful as possible, I think it, by necessity, needs to be in public domain. I mean you need -- you want people to have access to the information to use it, to begin to incorporate it into educational programs, to get it distributed down to students, for manufacturers to help sell product. All the different uses for public domain documents; and particularly because we are building off previous work that was public domain. And we're hoping that the DOE and others join in making this a continued living document or at least living electrons.

And so in that right, that's why we're taking this particular avenue. We're looking ahead. We're not assuming a paper document is going to be good enough in the way the business is evolving and the way people are beginning to learn. There are more and more electronic tools at home. We've got Web TV happening. We got cable TV getting involved.

The boundaries are coming down between industries. And we need to think way out in the future. Because, if we continued with a paper document, by the time we got there it would be very difficult to distribute and for people to use in a very live fashion.

MR. AYERS: I don't know we're precluding the possibility of a paper document, but that's not our primary focus right now.

MR. SCHWARTZ: Right.

CHAIRPERSON GRIMSHAW: Doug, did you have something you wanted to say? You got tired of standing?

MR. MAHONE: We've gone beyond that point.

CHAIRPERSON GRIMSHAW: Okay. Jim.

MR. BENYA: Have you also given any thoughts talking to the EIS headquarters about this and how it might relate to their future plans?

MR. SCHWARTZ: That's what we are hoping to do as part of the project, is to work with everyone who has similar documents or -- we didn't want to work in exclusion or in isolation from others. If we're going to get as widespread of a distribution and get industry acceptance, then we have to work with all the stakeholders. And that obviously includes EIS, as well as ASHRAE and others.

Does that answer your question or do you want something more concrete?

MR. AYERS: I will comment that the EIS does distribute the *Advance Lighting Guidelines* right now as part of their Lighting Efficiency Training Course.

MR. RUBINSTEIN: A couple of points I might bring up. Francis Rubinstein.

With regards to Karl's question at the end as to where DOE is going to be in all this, I've been talking with folks back at the DOE, primarily in the DOE FEMP office, and with regards to their possible support of this in the upcoming fiscal year. I have a big fat "maybe." So that's about as much as I can tell you right now. And obviously you guys will be the first to know when I get, hear more from what's happening out there on the other side of the country.

I think I can assure you, though, that the copyright issue will not be a problem with DOE. So I think it's great you guys have taken the lead by saying you're not going to be insisting on copyrights on this. That will not be a problem as far as DOE is concerned. The biggest problem is getting some money out of them.

MR. SCHWARTZ: Yes. We're certainly hoping either for DOE money

or money in the way of bodies.

MR. RUBINSTEIN: It's the same thing.

[Laughter.]

MR. BERRYMAN: He's a walking dollar bill.

CHAIRPERSON GRIMSHAW: Are we ready to take a break?

MR. BERRYMAN: I have one comment, and my short-term memory, I'll forget it. Oh, what was it?

[Laughter.]

MR. BERRYMAN: Sorry. Yes, I am trying to forget it. One of the things that's important about the *Guidelines* with the three organizations that currently are involved, and I intended to bring them down, the Department of Energy's is flaming orange or red, in a package binder. The Commission package is a set of modules. And EPRI's is --

MR. SCHWARTZ: You have to say it's in serene blue, the CEC.

MR. BERRYMAN: Yes. We're in serene blue.

But one of the important aspects of this is that if it is a public review process that produces a document, the partnership, the organization that's tied to this, I think it's important that, once it's out there, that the CEC doesn't decide, "Okay. We will have" -- there needs to be something up front as an agreement.

We're not going to change this here at the CEC because we've had a little hearing and we've decided that there's a change in some of the information without making sure that the original participants are all involved in any future changes.

And if it's in electronic form, then I think it's important that anything that's added that's beyond the public process, something that's out there you're linked to, an article or information that somehow what goes through the public review process doesn't change without all those involved being involved in the changes. Because I can see a situation where what we have could start to grow different from what is produced by the contract or by this collaboration. I shouldn't

say contract.

So this hasn't been a problem, but it's pretty much been agreement that EPRI has concerns that the *Guidelines* are falling behind technology and need updating, that they came here with that concern and that it went into the process, and that we don't get a diversification of the information and create confusion.

So I did remember.

MR. SMITH: Peter, has PG&E agreed to be the Web master?

MR. SCHWARTZ: We're looking at that.

CHAIRPERSON GRIMSHAW: Are you volunteering?

MR. BERRYMAN: In the past we had some information that Cal Poly might be interested.

MR. SMITH: Well, I volunteered to put the *Advance Lighting Guidelines* on our Website, sure. Yes. Not a problem.

MR. SCHWARTZ: Yes. Right now what we're doing is, as Brian said, expanding the outline and getting a much better handle on the scope and putting time and budget to that expanded outline. And we'll know more after we get to that through that stage.

CHAIRPERSON GRIMSHAW: Let's take about a 10-minute break.

[Brief recess taken from 3:39 to 3:58 p.m.]

CHAIRPERSON GRIMSHAW: Now.

MR. MAHONE: Okay. Well, in the little bit of time remaining we wanted to update you on the most recent round of analysis that we're doing on the Lighting Technology Report.

At the last LEAGue meeting I presented a series of scenarios we had developed for residential lighting in both new construction and existing corrections. We also talked about some of the baseline data that's been developed. Since that time we have completed our commercial model and have developed a number of commercial lighting efficiency scenarios.

And we now have the capability of showing you what the relative

energy impacts are for measures that would apply to new residential construction, measures that would apply to all residential through retrofit or remodeling process, and compare that on the commercial side with new construction or retrofit kinds of scenarios as well.

We also, in the mailing that most of you received before the LEAGue meeting, sent out a description, sort of a detailed description of what we assumed in each one of these scenarios so we won't have to spend a lot of time today describing in detail what the scenarios were, but we can answer questions if you have any.

Also included in that mailing was some data that we've been able to compile on commercial outdoor lighting. And if we have time, after going through the scenarios, we could talk about that a little bit, but we're going to focus primarily on showing you some of the results of the scenarios.

And I'll hand it over to Lisa, who's going to describe some of these numbers for you.

MS. HESCHONG: So you also have a handout that summarizes most of these slides, or actually more than what the slides are we're going to show you. The question: Is it easier to read on the handout or on the projected slide.

This first slide here summarizes information not from the model but from the analysis of what the average watts-per-square foot are by building type. And what the lumens per-square-foot were that we found among our sample.

Now the lumens per-square-foot, you should realize that it is mean lumen output for the lamp ballast system rather than initial lumen output, okay? So this is a modified number. And you will see that in general we are on the order of 1.5 watts per-square-foot in the building stock. Actually the overall average for the entire building stock is 1.48 watts per-square-foot. This is very good, in general.

What we find, when we take a closer look and go through space type by space type and compare it to a Title 24 type tailored compliance or area method compliance, rather, is that most of the building types and space types are very close to Title 24 compliance now.

And, therefore, one of the commercial scenarios that you'll see later, looking at just uniformly increasing the requirements from Title 24, reducing the watts per-square-foot requirements, has a rather modest effect until you get very aggressive about it, because we are already so close.

Another chart, which will be included in our baseline report, calculates the efficacy level by building type and by space type, which I think is quite interesting. We didn't include those slides, but look for them in the future.

So here back to the residential scenarios looking here at what kind of megawatt savings, these are for new construction scenarios. And not naming what they are, you'll see that in general they're on the order of 20 to 30 megawatt savings.

Now go to the retrofit scenarios. These include the entire residential building stock. And here we're on the order of 100 to 200. Okay. A 2,000 megawatt savings. That was the order of magnitude of that 1-to-10 that I was talking about earlier.

And can we go back to the new construction? In the new construction scenarios, N3, which is the largest, assumes that basically all indoor ceiling fixtures are converted to fluorescent lamps over time. And the scenarios have various assumptions built in about how fast that penetration rate is.

N2 is an outdoor lamp scenario assuming basically that outdoor lamps are converted to induction-type fluorescent lighting. Again this is the installed watt reduction. I should point out that we are using the term "installed watt reduction." It's similar to a demand reduction, but demand is obviously based on what kind of percentage of lights are on at a given time. This is the full capacity reduction that would occur through these scenarios.

Another one of interest, N5. This one assumes that wall-mounted lighting in bathrooms, which is defined as bathroom vanity lighting, is converted to fluorescent fixtures. This has fairly significant potential over a new construction scenario, especially when compared to N4, which is assuming a more aggressive enforcement of Title 24 requirements for kitchens.

What's happening there is that there is already a very high percentage of fluorescent lighting in kitchens. And so the savings potential is much lower. In this scenario we did not include chandeliers or track lighting that occurs in kitchens and bathrooms. But all other ceiling-mounted fixtures were converted to fluorescent.

And here you can see that the order of magnitude is about one-fourth of going for the same kind of an aggressive approach on bathroom vanities.

Okay. Let's move on to the new construction. I mean this is retrofit, all scenarios. Here the very large T6 is basically trying to get a sense of what the technical potential is in residential lighting, how large of a reduction you could go for. And what we modeled was that 75 percent of all incandescent watts were moved over to an efficient fluorescent system.

Here, keep in mind the order of magnitude there is about 9,000 megawatts of reduction statewide.

T1, which is on the order of about 1500 megawatts, is basically using the EPA Energy Star outdoor lighting scenario, which looks at either a very efficacious source or a less efficacious source with photosensors and motion sensors on it.

And with full penetration of that scenario, we're looking at about 1500 megawatts reduction.

T3 is a very aggressive scenario, assuming that all table and floor lamps in residential situations are retrofitted to compact fluorescents. So it's fairly aggressive. I think the most aggressive of all of the retrofit, with the expectation of this one, which is not exactly intended to be a realistic scenario.

Okay. Let's move on to the commercial scenarios. These are the energy savings. This is for the new construction. Let's move on to the existing. Okay. The energy savings we have calculated in two different ways. One is the maximum energy savings per year that occurs in the fifteenth year of the scenario. So that's at the full penetration that we've assumed.

We've also calculated cumulative energy savings over that 15 years,

which accounts for the penetration rate, how quickly that technology is adopted. And we'll be comparing both.

Let's move on to commercial. So here we have the statewide installed watts reduction for commercial scenarios. Almost all of these scenarios are new construction through here. These last three are retrofit scenarios. And I'll describe each one briefly.

Scenario C1 assumes that design methodology is improved so that designers can achieve a mean lumen output reduction of about 10 percent and still achieve the same lumen levels within a given space.

Improved maintenance in 2 assumes that, because of improved maintenance practices and better information on maintenance depreciation and maintenance practices, that on the order of about five percent of the lumen output can be produced and still maintain the same lighting level within a space.

CN6 assumes that Title 24 standards are applied to unconditioned spaces within the building stock, which they currently are not.

CN7 assumes that Title 24 standards are increased in stringency by 10 percent across the board for all space types.

The second one, CN8, makes the same assumption but at a 20-percent increase in stringency for space types. And these, again, help us get a sense of the magnitude that could be achieved.

MR. SMITH: Lisa, can I interject just a second?

MS. HESCHONG: Yes.

MR. SMITH: What's your confidence level of the numbers you are giving us?

MS. HESCHONG: Well, that's a very good question. My confidence level can't be expressed statistically because this is not a statistical model. This is a relational database model. However, we have gone through the results of these in two different ways. One is using the statistical analysis, which we have very high confidence in, and running a set of scenarios to see what maximum

achieved savings could be.

And the second is running it through the model and seeing that the results come out. Both those methods came out within three decimal points of each other, giving me a high level of confidence.

But, again, that's a qualitative assessment rather than a quantitative assessment. I can't give you a probability number.

But we do feel that these are very good numbers. The problem, of course, is that when you start looking into a crystal ball you're building in lots and lots of assumptions. Okay.

The probability that those assumptions will happen the way that you've described them is very low. And so your confidence that this is the actual number that will be achieved some time in the future has to be very low.

But it does very usefully give us a way to measure the relative impacts of different policies, given the assumptions of the scenarios.

So we look on this as an order-of-magnitude exercise and also a comparative one. In general, the model overall is producing baseline results, which are within one to two percent of the statistical analysis results. But when we start making changes within the model, the absolute numbers may not be precise but the relationships between the various models I think hold very well.

So moving on, I lost my -- there it is. All right. Scenario PN1 assumes that T8s and electronic ballasts achieve full penetration in all commercial spaces. This is a very aggressive scenario.

PN2 assumes the same scenario with T8s and electronic ballasts throughout with the addition of dimming ballast and lumen maintenance controls for 50 percent of the load.

CN6 assumes that incandescents are outlawed in commercial spaces and that all incandescents are transformed to compact fluorescents. Again, this tries to get at what the technical potential of savings could be. The relationship between the watt reduction and the energy savings I find very interesting between these different

scenarios.

CN3 is a skylighting scenario, which assumes that skylighting can be implemented in 50 percent of commercial square footing. Ninety-five percent of commercial square footage in California is one to two stories; 90 percent is one story. So in 15 years the assumption is that 50 percent has achieved skylighting with dimming and photocell controls. Obviously there's no overall installed watt reduction, but there's energy savings that are associated with that one.

CN9 is a very interesting scenario that's new and was not added in the handout that you got in the mailing. What it does is it takes the same methodology that was used to generate the original Title 24 target numbers and sets them from 1990 technology, which was what originally used, up to 1995-96 technology. So that in this scenario all fluorescent lighting is converted to T8s with electronic ballasts. All incandescent lighting is converted to a tungsten efficacy level. And one more.

Jim, what's the third one?

MR. BENYA: Controls.

MS. HESCHONG: No, not controls. Not controls.

AUDIENCE MEMBER: We can't hear you.

MR. BENYA: This is based on the theory that the modeling techniques for Title 24, at least the ones I worked on a few years ago, we created models in which -- they were lumen method-type models. And one of the components of that is a source efficacy. And what this one does is it increases all of the source efficacies.

Compact fluorescents was the other one. We went from, I think, a nominal 45 lumens per watt up to about 60, making the assumption that electronically ballasted compact fluorescents would displace magnetically ballasted compact fluorescents.

MS. HESCHONG: Okay. Peter.

MR. MILLER: So that was essentially a cost-effectiveness analysis?

MR. BENYA: Use a mic.

MR. MILLER: Sorry. Peter Miller with NRDC.

Do I understand that what you did was you did a Title 24 type cost-effectiveness analysis to determine --

MS. HESCHONG: No. This is not a cost-effectiveness analysis. It's simply saying that the Title 24 watt per-square-foot limits were set using a lumen efficacy method based on 1990 technologies with standard efficient magnetic ballasts throughout, and so on.

So we took those assumptions and moved them up a notch to available technology in 1995, which is that all full-size fluorescent lighting goes to the equivalent efficacy of an electronic ballast with a T8 lamp; that all compact fluorescents that are existing in our database are moved from a magnetic-type compact fluorescents up to an electronic efficacy; and that incandescents are moved up to tungsten halogen equivalent efficacy.

What are the resulting numbers? Well, here we have a megawatt reduction. What I find interesting -- a couple steps down we'll get to the watts per-square-foot reduction overall. And this one results in a .25 watts per-square-foot reduction in the building stock. So it's a good order-of-magnitude study.

Okay. The last three here again are retrofit scenarios. T3 assumes that incandescents are retrofitted with compact fluorescents throughout the building stock. I forget what the full penetration level is.

T1 assumes that occupancy sensors are applied very aggressively depending on the space type. We applied different ratios of savings for different space types. And, of course, there's no wattage savings here but there is energy savings.

And, finally, T2 assumes that high efficiency ballasts are used for all metal halides and that HPS replaces the less efficient HID type lamps.

MR. DAIBER: Excuse me, Lisa?

MR. SCHWARTZ: Yes.

MR. DAIBER: You had mentioned in the one saving scenario, that was not in our charts, that you had converted incandescents to tungsten in efficacy. How

did you split between tungsten and CFL as to which source would be replacing the existing incandescent?

MS. HESCHONG: If it's existing a Confidential, it's simply increased in efficacy. If it's existing as incandescent, it's simply increased in efficacy to a tungsten halogen. So we weren't converting incandescent to compact fluorescents.

MR. DAIBER: Okay.

MS. HESCHONG: We were converting incandescent to halogen.

MR. DAIBER: And magnetic to electronic ballasts.

MS. HESCHONG: And magnetic to electronic.

Okay. Here we have statewide energy savings at full penetration 15 years out, and the scale is cut off. Can you do anything about that, Doug? All right. This is 1,000, 2,000, 3,000, 4,000.

And so you'll note here in the residential we were looking at 2,000 megawatts as the maximum savings in our scenarios, in general, for the retrofit scenarios. So the retrofit residential scenarios are comparable in general to these commercial-type scenarios.

The residential new construction scenarios are way down here. They're about one-tenth. They're looking at about 2- to 400 megawatts of savings rather than 2,000 to 4,000 megawatts of savings.

CHAIRPERSON GRIMSHAW: 4:20, if you're looking for a clock.

MS. HESCHONG: What happened to the energy savings? Okay. Now energy savings, you start seeing greater energy savings here in terms of the skylighting scenario, energy savings in terms of the occupancy sensor scenarios.

To reiterate how the model works, using our statistical database we have assigned hours of operation to space type per building type, we have assigned penetrations of different technologies to every space type. And all of that is based on a lumen target that has also been analyzed with each space type.

So that, as market shares are shifting between different technologies, the mean lumen output-per-space type is remaining constant unless it's one of these

Title 24 scenarios or the design or maintenance scenarios, where we're actually reducing that target by a fixed amount, by 10 percent or 20 percent, 5 percent, whatever.

Okay. Let's go to the watts per-square-foot. So here we have installed watts reduction per-square-foot. And, again, this is for all commercial space. This isn't reduction. This is total watts calculated.

MS. SPENCER: Are we running out of time?

CHAIRPERSON GRIMSHAW: Yes, we're getting closer.

MS. HESCHONG: Oh, I'm sorry. I'm misreading the zero, which is cut off as one. Okay. Forgive me. A big difference.

Okay. So the scenario we were just talking about, the aggressive Title 24 new standards scenario is looking here at a reduction of .25 watts per-square-foot across the whole building stock, which is the most aggressive.

The one which is quite similar, which is taking all of existing fluorescent to T8 electronic ballast level of efficacy, is showing about .17, .18 reduction in watts per-square-foot. So the difference between the two is the changes in the compact fluorescents and in the incandescents.

Looking at the Title 24 reductions, by reducing Title 24 requirements on an area method basis by 10 percent from what they currently are, we're looking at slightly more than a .05 watts per-square-foot reduction over all to the building stock.

In other words, you would have to be much more aggressive about Title 24 standards in order to achieve significant savings.

When you look at a 20-percent reduction, because a lot of the buildings are already at this level, we're seeing more on the order of about, again, .17 watts per-square-foot reduction over the building stock.

Any questions on this one?

Okay. Go to energy savings. I'd like to open the discussion at this point about, A, the implications of these scenarios or, B, the other scenarios that LEAGue

thinks would be interesting or relevant to pursue at this point.

We also have information on commercial outdoor lighting, which you received in the mailing. And we could go over those if you're interested. So either topic is open to discussion.

MR. LIEBEL: Brian Liebel.

Lisa, I just want to say or add one thing to your scenario with regard to changing the compact fluorescents to all electronic ballasts. That was included in your most optimistic projections; is that right?

MS. HESCHONG: Yes.

MR. LIEBEL: Yes. That, in regard to our studies with doing that, we found that many of the manufacturers are saying that there is no cost impact to going to electronic ballasts for compact fluorescents over magnetic.

In fact, one of the manufacturers is charging extra to keep magnetic ballasts in. And very interesting the way that market sector has turned around. So I think that's a real viable thing at this point in time to look at as a possibility in regard to regulation, so forth.

MR. MAHONE: One of the things --

CHAIRPERSON GRIMSHAW: Right.

MR. MAHONE: -- that I find interesting about the scenarios is if you compare what Lisa was characterizing as the aggressive upgrade to Title 24 which is essentially a 20-percent reduction in Title 24 allowances for lighting power, that is actually less savings than the scenario where we took everything that Title 24 was based on and brought it up to current technology.

So what's that saying is current technology makes it fairly easy to go better than 20 percent beyond what Title 24 is currently requiring.

MS. HESCHONG: Either difference in the approach between the two is taking Title 24 20 percent more stringent applies across all space types. And some space types can easily meet Title 24 and some space types can't. Some space types have a preponderance of fluorescent lighting which is easily upgrading. Some space

types use other sources.

By, instead, setting the standards based on the existing T8 electronic ballasts, you're equalizing the impact on all space types assuming that it's easy to meet those three criteria, electronic ballasts for fluorescent and full-size fluorescent and tungsten halogen wherever incandescent is used, you're not imposing an undue restriction on space types that can't easily convert or that are already having a hard time meeting Title 24.

MR. BENYA: But in all fairness to even our most aggressive idea here, in the modeling methods of Title 24, to come up with the values, each model is a real room model. In other words, a hotel ballroom, which is one I sort of use my classic mixed-source model because of the dimming requirements and incandescent requirements and everything else, you would find its value would not change as great as would, say, a space that lent itself more to HID and fluorescent lighting.

The net result of it all is still that tallest column. So it's really not going to be particularly unfair to any single space or any group of space. As a matter of fact, it should work very, very well.

The theory is that we have advanced since that -- it is really older than 1990 technology -- we really have advanced. But our models were based on the ready acceptance and availability of that technology in 1990. And we have an entirely different set of technologies today.

I do believe that that tallest of these is doable. And I believe it's readily doable.

I think that the shortfall will be -- in the very short term there will be a lot of consternation, both amongst people who work here at the Commission and amongst the practitioners, to "Holy Mackerel, we're going from one and a half watts in an office building to one and a quarter." And I think the initial reaction of everybody is going to be, "Geez, we can't do that."

And I hate to tell you, but you can pretty easily. And I think that most office spaces, schools, a lot of other buildings, Title 24 standards right now are pretty

loose relative to what can be done at reasonable cost and within -- and Peter Miller snuck out -- but within reasonable cost-effectiveness.

And these are the issues that Title 24 always considers. And I don't see where we have any real concern with trying this one on. I'm pretty big on going for the big number here.

MR. RUBINSTEIN: If I can just -- Francis Rubenstein -- one comment here. It seems to me as though this is sort of what we would call at DOE a technical potential analysis. The economics are not here, am I correct in that, the actual economics of doing these different things is not --

MS. HESCHONG: That's correct.

MR. RUBINSTEIN: -- embedded in this analysis? Okay.

I think that clearly would be something one would want to look at it, because if you're going to go for that biggest column is that, in fact, a relatively inexpensive or not too expensive measure to actually go -- I mean --

MS. HESCHONG: Well, the economics is included in this modeling in the sense of the various penetration rates.

MR. RUBINSTEIN: Oh, okay. So, in essence, you only then applied the technology to those areas where it would, in fact, be -- you could make the cost-effective argument; is that --

MS. HESCHONG: When it's cost-effective right now we can assume early penetration rates, where the technology is more quickly adopted.

When the technology is not cost-effective, but seems to have potential to become cost-effective in the future, we can assume a late penetration rate which assumes that penetration is very slow for the first 10 years, and then increases --

MR. RUBINSTEIN: Right.

MS. HESCHONG: -- 15 years out.

MR. RUBINSTEIN: Okay. The one other thing I think I would add is that -- I went through this fairly hastily as you were giving your presentation -- but I didn't see anything here on the use of dimming electronic ballast in commercial

structures, manually dimmed, to basically get at different light levels, less than full light output. And my suspicion is that's going to be a real energy saver when it gets used. There will be a great diversity associated with that because some people will go all the way to the top, but some won't.

MS. HESCHONG: Well, I'm glad you brought up that point, Francis, because --

MR. RUBINSTEIN: I always play the straight man.

MS. HESCHONG: -- we don't have any way to assess how much savings there would be from that.

MR. RUBINSTEIN: Hopefully I'll be able to tell you in a few months. Hopefully.

MS. HESCHONG: Good. But one of the points that I did want to make, especially relevant to the earlier discussions that were being had, is that all energy savings on controls I think are still out in the jury whether controls are actually saving energy. And about half of the studies that have been done show that controls are not saving energy, whether they are EMS systems or time clocks or occupancy sensors.

There's a variety of them. I've been collecting every control study that I can find, trying to assess how much energy can be saved by various control types.

Our own data is very inconclusive. Some controls applied to some space types seem to have longer hours of operation; some space types have lower hours of operation. But, because our data has come from different buildings, we don't know if it is just selective that occupancy sensors are applied to systems that have long hours of operation and, therefore, in our data seem to have longer hours of operation, but they are actually saving energy.

We can't apply a reason to our statistical database, so we can see what is happening. The only way to really assess that is to do a long-term study, before and after, with the same behavioral factors. And generally those are very few. And the ones that have been done are inconclusive.

Where, for instance, PG&E monitored a number of buildings that included occupancy sensors as part of their energy efficiency measures half of those buildings saved energy, half of those building increased their lighting energy use. And then you start wanting to drill in and say, "Why did the lighting energy use go up when occupancy sensors were applied." And there's a wide variety of reasons for every single building you look at in a case study. But we don't have enough information to generalize yet on controls for either residential or commercial.

CHAIRPERSON GRIMSHAW: Off, in effect.

MR. MAHONE: Just one other thing to point out, as you look through some of these numbers. The scenarios where we posited improvements in design practice or in maintenance practice were our attempt to get at a number that could result from some of the educational kinds of activities that the LEAGue has been talking about. There seems to be fairly general agreement that education and improving practices is a worthwhile goal to pursue.

We were trying to put an energy number on it so you can compare it to some of the more hardware kind of scenarios. And so, for example, the two left-hand bars on this graph are just that sort of thing. The left-hand bar says you've educated lighting designers, and they've now improved their practice to the point that they're using 10 percent less lighting energy than they would have before.

And you can see comparing the height of that to the height of some of the others it's roughly somewhere in between a 10- and a 20-percent increase in the stringency of Title 24 in terms of the effect that it would achieve.

So just something to keep in mind as you're looking these over.

MR. BERRYMAN: Doug?

MR. MAHONE: Yes.

MR. BERRYMAN: Did I hear that the assumption was made that the designer, the trained person, would use 10 percent less?

MR. MAHONE: Right.

MR. BERRYMAN: And was there a basis for that assumption?

MR. MAHONE: No. It was just a call.

MS. HESCHONG: Called professional judgment by your expert lighting team.

MR. BERRYMAN: Okay. How can I find that?

MS. HESCHONG: Of what we have seen in practice. And 10 percent is a reasonable and achievable number with design practices.

MR. MAHONE: The bar next to it, the second bar in from the left, is a five-percent improvement. And if you want, we can run a 25-percent improvement, how good you think it's going to get.

MR. BERRYMAN: But there is no -- from my looking into this there has not been a study done to show the difference that might occur in design characteristics from competent lighting professionals versus --

MS. HESCHONG: That's true. Otherwise we would have used it.

MR. RUBINSTEIN: An important part I think is that most of us, looking and hearing those numbers, I think they basically passed the giggle test, which is probably about as far as you will get in things like that. Does it basically sound okay. If you came up with 50 percent, none of us would have believed you.

MS. HESCHONG: Right. Now, alternatively, you could say that a good designer would pursue this scenario. A good designer would install T8 lamps and electronic ballast in every possible location.

This is using technology and the same target lumen per square foot for that space. So it's possible that, using these technologies and also reducing the target lumens for that space because of increased design efficacy, right, that this number could get even larger. Some of these numbers can build on each other.

MR. SCHWARTZ: I'd like to make a comment, that the evidence that we're seeing in a lot of our incentive plans, particularly with commercial buildings, is we're seeing, for example, new construction coming in averaging around .9 to 1 watt a square foot, to as low as .7 watts a square foot. Obviously different assumptions than that went into your study because of when you're down at .7

you're going to have different amount of lumens than you are going to have at one watt.

But what we're seeing is that, in terms of the marketplace, a lot of the change to even get most of the way there, as Jim pointed out earlier, is just simply substituting one for one, T12s coil with T8s and electronics.

And then if you take it even further and use more compact fluorescents and using a little smarter design, it's relatively easy to get down to one watt and less. And obviously, compared to the current Code, we're looking at savings over a half a watt a square foot.

And that's not even looking at the additional savings associated with ATREC and cooling-load reduction.

MS. HESCHONG: Well, to try and clarify the difference between a designer thinking about a particular building and how low you could go on a given building, okay, versus Title 24 versus these energy savings numbers, which are based on the building stock in California, as best we can describe it. So we're not setting design targets for buildings.

We're trying to describe how much energy savings could be achieved in California, given the building stock as we have it now and given the lighting levels that we have now and the lighting power density that we have now.

CHAIRPERSON GRIMSHAW: Peter.

MR. MILLER: I mean I think it is worth noting that, even with that aggressive one, you still have tungsten lamps you could put -- sorry.

There's an opportunity to put more compact fluorescents lamps in there as well. And the changes in lighting power density and improved design could substantially increase these savings. I mean they are additive in the number of cases.

MS. HESCHONG: That's right. We could do a more aggressive case.

MR. BENYA: Peter, the reason why the modeling that led to the tall bar there is created the way it is, it's designed to create models that, within a Title 24

framework, still allow reasonably normal design, but just keep squeezing it down to the point where normal design occurs. But in order to have the flexibility of normal design you're going to have to use fairly energy efficient stuff for most of the lighting.

So if you want to have incandescent down lights in a lobby you can, but you're going to have to be extremely efficient at everything else.

Your point, which is, and some of what Peter was just saying about going below that, I would be the first to agree that I think you can design reasonable office space between .7 and .8 watts per-square-foot of connected lighting power and then controls can reduce the energy on top of that. But that's at the demonstration level. That's where cost-effectiveness is questionable, possibly not cost-effective.

Within the modeling system here, that I'm proposing in this scenario, we are talking about lowering the bar even further on Title 24, but not prohibiting relatively normal design practices any differently than people just practiced lighting design effectively in 1990 in California.

So nobody really loses. We just maximize taking advantage of the available technology. That's the beauty of that proposal. And I hope everybody sees it, because that's the one I am the biggest advocate of.

MR. SUGAR: This is John Sugar.

And, if I may interrupt for a moment, we missed an item on the Agenda which was setting of the date and time for the next meeting. And I wonder if, before we lose more people, if we could just do that and then go back to discussion?

CHAIRPERSON GRIMSHAW: Well, that opens up an interesting question. This was the last meeting of the LEAGue, quote-unquote. Now you're suggesting that you want our services extended beyond the cutoff date or up to the new May date.

What, when and where are you suggesting that we need another meeting?

MR. SUGAR: Well, my first question would be of Doug and Lisa. What

is the schedule for the next deliverable?

Is there another deliverable?

MS. HESCHONG: Yes, of course there's another deliverable.

I think it depends at what level you would like LEAGue input. At the very least I would propose that when the final report is done that it be available to the LEAGue to review and comment.

This is the point where, if any members of the LEAGue want to suggest additional scenarios or additional analysis, it should be coming forth. After we've done this we will be putting together the commercial baseline and then translating that into final analysis and recommendations. And that's within the next two months.

So I would be looking at the end of February, early March.

MR. SUGAR: Fred, what agreement did we have with LEAGue members? Is there anything written down that says this ends? Not that I'm pressuring people, but I do know --

MR. BERRYMAN: Norm is just looking at the time of day --

MR. SUGAR: -- but I do know that there were agreements with people which probably include the legal coverage that the Energy Commission provides, if there was an end date to it.

MR. BERRYMAN: I would have to look at ones of those -- you're talking about the Personal Services Agreements.

MR. SUGAR: Yes.

MR. BERRYMAN: And I'm sure they go well in 1997.

MR. SUGAR: Good thinking.

MR. BERRYMAN: And we could check one of those.

MR. SUGAR: Well, could we --

MR. BERRYMAN: But one of the things I recall was that we have, as part of the concluding activities of the contract, a public workshop. And I think one of the items was a submittal of the final Report to the LEAGue.

So in our last discussions -- I'm really a cop-out here in terms of what I announced here this morning. But the meeting, the last meeting that we had, we made it pretty clear that we're dealing with an Interim Report and providing extra time in the process for the completion of the Position Papers and information that comes in from the LEAGue, also the reaction and response to the contract.

I think it was pretty well understood that this would involve another opportunity for the advisors to get together with us. And whether it's one or two and when it happens, -- do you have any problem with that?

CHAIRPERSON GRIMSHAW: No.

MR. BERRYMAN: I mean --

CHAIRPERSON GRIMSHAW: No. I want it discussed, is all.

MR. BERRYMAN: Well, you should have brought it up.

MR. SUGAR: So does this make the end of February an appropriate time?

MS. HESCHONG: Well, from what Fred was saying, would this be a public workshop, --

MR. SUGAR: Well, we could --

MS. HESCHONG: -- or will this be a LEAGue meeting?

MR. SUGAR: Well, there had been talk of having a public workshop, and I believe then followed by a LEAGue meeting. Or did you envision that as part of the LEAGue meeting, Fred?

MR. BERRYMAN: Okay. Actually that was written as part of the contract. I don't have that in front of me. But what makes sense, I guess that's the question right now. I think there's a flexibility to do what makes sense in terms of sending materials out for review, holding a public workshop, followed by some final fine-tuning by the LEAGue.

Or does the LEAGue wish to be involved before there's a public workshop. I think that would be the...

MR. DAIBER: It seemed to me that at this point the public workshop

would probably be the next step, to get that input that we could then use in the final.

CHAIRPERSON GRIMSHAW: How quickly can we have a draft final Report?

MS. HESCHONG: Well, I'm looking at the end of February.

CHAIRPERSON GRIMSHAW: The end of February.

MS. HESCHONG: And then if you want review time before the meeting is called, that would suggest March.

MR. SUGAR: So the end of the first week of March, the beginning of the second week, something on that order? Give us -- have a chance to get it out for a week of review.

MR. MAHONE: Yes. I think it's a question of whether the Commission wants to have a week to review it and then send it out with a public notice for a public workshop with suitable lead time for public notice, or whether you want to telescope all that.

MR. SUGAR: Well, then they should probably be mid-March, because with a public workshop we do need to have a -- look it over and then get it out in time.

So do you have a 1997 calendar?

CHAIRPERSON GRIMSHAW: Yes, sir.

MR. SUGAR: Is there a day in mid-March which looks okay?

CHAIRPERSON GRIMSHAW: The third week is the 17th through the 21st. It starts off with St. Pat's Day.

MR. SUGAR: Ah, and there's a special in the cafeteria.

CHAIRPERSON GRIMSHAW: Corned beef and cabbage, and green beer, right.

MR. SUGAR: Well, given that, what is the best day for people who have to travel?

CHAIRPERSON GRIMSHAW: Not Monday.

MR. SUGAR: Not Monday. Well, should it be the end of the week so

that people can take advantage of the over-half-weekend air fare, or does that matter?

CHAIRPERSON GRIMSHAW: I mean I'm probably -- or Peter and Don Miletich and I are the only ones that really could take advantage of that. I don't think that's an issue.

MR. SUGAR: All right. Well, how about toward maybe the 20th?

CHAIRPERSON GRIMSHAW: The 20th is Thursday.

MR. SUGAR: Give us a Thursday, and that gives us an opportunity to get ready for it.

CHAIRPERSON GRIMSHAW: Then what happens after the workshop?

MR. SUGAR: The contractor takes comments and they complete the Report.

CHAIRPERSON GRIMSHAW: And then how much time does the Commission need to get their Report in on time?

MR. SUGAR: Well, by then we'll have, I suspect, a pretty good idea of what the Contractor's Report will say, so we'll probably be finishing them up in parallel, would be my guess. We want to finish up at the end of March and start the process here of Commission approval and then getting the Report to the Legislature.

CHAIRPERSON GRIMSHAW: And the report is due at the Legislature when, the first of May or mid-May or the end of May?

MR. SUGAR: The end of this month.

CHAIRPERSON GRIMSHAW: Yes, I know.

MR. SUGAR: And we hope to make it in early April.

CHAIRPERSON GRIMSHAW: Oh, okay.

MR. DAIBER: Just to clarify, this March 20 meeting is going to be the public workshop?

MR. SUGAR: No. We will probably have the public workshop a couple of days before, and then we would have the LEAGue meeting following.

MR. DAIBER: Okay.

MR. SUGAR: So we would have a record of comments we got from the public. We would have the draft Report out to everybody for review as well, and then we could sort of get final comments from LEAGue.

CHAIRPERSON GRIMSHAW: Oh, okay. You don't invite us to the public workshop?

MR. SUGAR: If you'd care to come, you're certainly welcome to. Be more than happy to have you.

MR. HILL: You're not public.

CHAIRPERSON GRIMSHAW: Yes. Can you have the public workshop on the 18th?

MR. SUGAR: Well, I suspect we will.

CHAIRPERSON GRIMSHAW: And then have us back on the 20th?

MR. SUGAR: That's what we're going to try to do.

CHAIRPERSON GRIMSHAW: And you need 48 hours' difference? Twenty-four hours to swallow...

MR. SUGAR: Well, we could do it the next day, if you like. We could have it on Wednesday, the 19th. It'd give us an extra day to work.

I see Doug checking his calendar.

MR. MAHONE: I think there's an advantage to having them one right after the other, because that way the people in the LEAGue that want the more detailed presentations can come to the public workshop. And then we can do sort of a more brief policy kind of discussion amongst the LEAGue.

MR. SUGAR: Okay. Does this work on your schedule?

MR. MAHONE: Yes.

MS. HESCHONG: You're gone on the 20th.

MR. MAHONE: Yes. The 18th and 19th works. I have to leave. I'll be gone on the 20th.

MR. SUGAR: The 17th, 18th? Would a Wednesday work? Would the

17th work? That gives an extra day to --

MR. MAHONE: The 17th, 18th is a little better, if we could do that.

MR. SUGAR: All right.

CHAIRPERSON GRIMSHAW: That's a Monday again.

MR. SUGAR: Oh, is that -- oh, that's right. The 17th is a Monday.

That's for the public workshop.

MR. DAIBER: That would make Tuesday the LEAGue meeting.

MS. HESCHONG: Well, the week before, alternatively, like the 12th and the 13th.

MR. SUGAR: Okay. Would that give us probably about 14 days between receiving the draft -- and does that give us a chance to review it and then get it out 10 days ahead.

Well, how about the week ahead of time, then? Which days work for you?

MR. MAHONE: That week.

MS. HESCHONG: Wednesday and Thursday, the 12th and 13th.

MR. SUGAR: Would the 12th and the 13th be acceptable? Maybe we can get the cafeteria to preview their special.

MR. MAHONE: Take some green food down to lunch with you.

MR. SUGAR: That's good. And I have to go. Thank you.

Oh, we could hold it here. Are people amenable to that?

CHAIRPERSON GRIMSHAW: Well, the workshop has to be here.

MR. SUGAR: Well, the workshop would be here. And then we'd hold the LEAGue meeting here as well, if people are amenable to that.

CHAIRPERSON GRIMSHAW: So if Cancun is out, that sounds good.

MR. SUGAR: The Governor's Office just wouldn't approve that in time.

CHAIRPERSON GRIMSHAW: The workshop starts at what, ten o'clock in the morning?

MR. SUGAR: Ten o'clock.

CHAIRPERSON GRIMSHAW: And then the LEAGue can start at 8:00 or something the next morning.

MR. SUGAR: If LEAGue members are so inclined.

CHAIRPERSON GRIMSHAW: Okay. Hearing no opposition...

Anything else? Any recommendations at this point from the contractors? Anything that the LEAGue would like to see added to the scenarios and modeling between now and the draft final Report?

MR. SCHWARTZ: *Si* -- that's yes. The contractors can reflect on their ability to do this, but I think it would be important to look at some of the ramifications on the cooling savings. And even if they're able to give it the old thumbnail on some of that to look at some of the ancillary effects of reducing lighting.

Because I think, if we're going to look at buildings, we might as well as look at pretty much the entire building and the associated benefits of more efficient lighting. So if you could kind of scope that out and see if that's possible.

MR. MAHONE: Yes. We were talking about that a little bit at lunch. We're not going to be able to deal with cooling effects with any great precision, because that would require us sort of breaking the model down climate zone by climate zone and probably even factoring in the vintage of the different cooling systems that are out there. Because an older, less efficient cooling system will actually achieve greater cooling reductions from a lighting system retrofit than a new efficient system would. And we don't have the data or the resources to really go into it in any detail.

But we certainly can discuss the magnitude of the cooling effects. And the simplest we could say, "Well, if you assume an additional 10- to 20-percent energy savings, then that gives you this much additional and it does this to the magnitude of the different scenarios."

We also have sort of a simplified algorithm that we could apply to this

sort of experimentally just to make sure that we come up with the right order of magnitude.

MR. RUBINSTEIN: Runquist [phonetic] has a model that he published a piece of it in LDNA about three or four months ago which had different cities and showed the estimates, the estimated savings in cooling and the additional penalties on heating --

MR. MAHONE: Right.

MR. RUBINSTEIN: -- as broken out by different cities. Obviously it's a wild guess, like anything else, but it might get you a little closer than just simply a third-of-a-watt sort of thing.

MR. BENYA: I might also throw something back at Peter. Peter, the sensitivity of demand or peak demand may also be something of significance here that we might be able to address better than that.

MR. SCHWARTZ: Um-hum.

MR. BENYA: Could you comment upon the sensitivity of your company's grid to peak demand and how beneficial that might be?

MR. SCHWARTZ: That would be extremely beneficial to our company's grid. And I think, particularly looking into a new era where you're going to have sort of a debundling of the electrical industry from transition and generation, I think knowing potential savings to a grid and also looking at future growth to a grid and the implications associated with new building stock, I think demand is going to be critical.

MR. MAHONE: Okay. Any other suggestions, requests, comments? I see everybody looking at me like what.

MR. BERRYMAN: Just a real quick final. In the area of quantification that goes with either education or certification, I would be interested if a part of the Report indicates that there is a lack of quantification in this area and does require a considerable amount of picking numbers.

The other area that we talked a lot about, we were talking about having a

qualified designer do the work.

There's another area, and I don't want to generate time or discussion on this now, but we spent a lot of time talking about the importance of what we refer to as the "tier 1 education," the BOMA organizations, the various people who do not now recognize the value of lighting, and having those -- I don't know that there's any way to crank it into the numbers, but to me that's the front end of getting the job done in the market transformation area.

And some comment that that has -- because whenever anybody's asked to spend money on something to get something done to achieve a goal which is energy efficiency, if we have some basis for either going into more investigation of this and getting some quantification of what happens when we have identified people who have a care about lighting, what kind of buildings do they have. It may not be part of this study, but I think it's an important issue. We've identified it in our discussions, but we don't have it as part of one of the scenarios.

And so saying that it's not part of that, because there's a lack of information as to what actually does happen when someone understands the appropriateness of investing in quality design for their lighting systems, not necessarily terribly expensive, but getting the quality people to do it.

And I recognize that the scenario that picks 10 percent is one way of looking at how this can happen. But we're also facing situations anecdotal that say that a qualified person may make a difference of 30 percent. And the difference is quite significant.

And if there was a way of quantifying it, it would make it much easier to spend the money on educating the people at the tier 1, the building owners, the building official, the management people that do this.

So if there can be something in there that addresses this that's, not a new project, but something in there that addresses this gap that we have, I'd be glad to see it. Happy to see it.

MR. MAHONE: Yes. We can certainly put in a discussion like that.

We've been looking for some guidance on what the magnitude of the effects would be. I mean we've made our own sort of simple educated guess. But if the people that are involved in the NCQLP or in the lighting education efforts can suggest other ways of modeling the scenario that might be more realistic, we'd be happy to do it in the analysis.

Your suggestion, for example, that a qualified lighting designer could produce a 30-percent savings in -- or a 30-percent improvement in efficiency, we can certainly model that. But we also would like some guidance as to what kind of a penetration we could achieve with that kind of a provision. Are qualified lighting designers going to be doing that for every single building or are they going to be doing it for half of the buildings or for a tenth of the buildings.

MR. BERRYMAN: Well, I guess that's one of the questions, but the other is: How can you get, since we don't have confidence in this area as to what the impacts of the users making -- or issuing requirements that they want work done by qualified persons or having the people themselves that are out there, a certain percentage of them, qualified in doing it, when they can find a user that wants their services.

What is it that can be done to find out what that difference is, with some degree of confidence, so that you could go to a funding source and say, "I'm looking for this many dollars to educate this many people in the building owner and manager, decisionmaker category."

So it's identifying the gap and then saying what the questions are that need to be answered. It just seems to me that that is an area that we're left having to do it all anecdotally now. And if there is some way that might be able to pin it down more accurately, it would be worthwhile.

MR. MAHONE: Okay. Well, Mr. Chairman, I see a bunch of people looking towards the exits.

CHAIRPERSON GRIMSHAW: Yes. I have had no request from the public to make any comments. I would ask again: Are there any public comments?

MR. SALES: I'd like to make a real quick one.

Hello. I'm Jack Sales from the California Chapter of the International Dark Sky Association. I've greeted you folks a number of times.

I'd just like to say a few comments about the *Advance Lighting Guides*. One of the members sort of politely slapped my hand the last time I was here about my comments on drop-lens cobras and revealed that, no, I'm not a lighting engineer, but my expertise is in the area of electronics and computers.

And I've done quite a bit of work with expert systems and artificial intelligence at one time, back when hypertext was just getting start. In fact, that's what the network -- the Internet is all about, hypertext. And I'd like to say that I think these folks are right on target. It's a proven technology. It's proven a good way of educating.

I work at McClellan for the Air Force, and we're converting all of our technical orders over to CD ROM. A lot of our forms are all on electronics now, so that's where we're headed. And I commend them for their effort and recognize a good job on their prototype.

I'd like to say that since I've been involved with starting a local chapter in California of the IDEA in California, I've had a number of responses from people, both telephone calls and Email, and the fact that there are a lot of people out there interested in what you're doing and improving the efficiency as well as better designs that result -- and those people will be grateful for some of the things that I hear here.

I'm encouraged every time I come here. And know that, from our perspective, there will be much better outdoor lighting in the future.

I would like to comment one time on -- the residential group talked about concern about barn lights and comments about feeling that regulations may be would be detrimental.

One of the things that's happened in the state of Arizona is they have a regulation against mercury vapor lights. And I think that has been beneficial for a

lot of people. It's actually made it so that some of the lighting engineers and companies are selling more and better products. So I think it could be an improvement for everybody.

Thank you.

CHAIRPERSON GRIMSHAW: Thank you, Jack. Nice to see you again.

MR. SALES: Thank you.

CHAIRPERSON GRIMSHAW: Anything else to be brought before we adjourn?

MS. HESCHONG: Well, while we're on outdoor lighting, and since we didn't go through our outdoor lighting numbers, I wanted to just add briefly that what we're finding is that outdoor lighting in commercial varies from about .1 watt per-square-foot of interior space to about .6 watts per-square-foot of interior space.

So you take all the interior space, multiply it by .5 watts per-square-foot, that's about the installed wattage that you have outside of the building.

What that tells you is that the order of magnitude of savings from outdoor lighting, if outdoor lighting could be reduced 50 percent, 25 percent, is on the order of the magnitude of some of these scenarios also.

Of course, there's a different time period involved, and we're not looking at the same kind of demand reductions because it's all nighttime lighting.

MR. SUGAR: I listened to one of the presentations at one of the ISNA, I think it was in Miami, I believe. They were talking about the Rockefeller Center in New York. And they made the comment there, Terry McGallin [phonetic], that the lighting cost to light the Rockefeller Center in New York was more than all the lights inside that entire building, just due to lighting, just to get the visual effect at night for the Rockefeller Center in New York.

MS. HESCHONG: That is an extreme case.

CHAIRPERSON GRIMSHAW: Since I worked on some of the equipment on that Rockefeller Center, I understand that.

Jim.

MR. BENYA: I happen to have been doing a very interesting series of studies in Atlantic City on all the hotel/casinos. And one thing I've become very familiar with is the amount of energy that is spent lighting a typical hotel/casino in Atlantic City, New Jersey.

And the average illumination on the side of a hotel tower is typically in the 20- to 30-foot candle range for the entire tower. And it is in some respects, this is the extreme, this is the not-ordinary, in the past energy standards, particularly Title 24, have avoided exterior lighting as an issue.

Part of the reason is I think there's a widespread belief that there are -- whereas there are extraordinary situations, most exterior lighting is not generally frivolous or wasted. Most of the time it is being done for a purpose and it seldom occurs on an everyday project.

We made this point I think two or three years ago when we were having -- one of the Commissioners was here and had asked the question, what could we do. And we said, "Now look at all the wasted light at a sports stadium with all those lights that are turned on."

Well, they're usually only turned on Saturday or Sunday afternoons or evenings for baseball games and things like that. And the hours aren't there.

And I think we need to be reflective. The real issue that the gentleman just raised about dark sky is a very honest opportunity. I think all of us at design lighting recognize that whenever energy trespasses, or worse, goes up into the sky, it's being wasted. The energy is now being wasted.

And there tends to be -- most exterior lighting that have the low cost or budget variety is very sloppy photometrically. It's intended to be that way to make up for the sloppy manner in which it's applied about three-quarters of the time.

So the issue here is a very legitimate one. There are energy savings opportunities in minimizing light trespass and light pollution. Whereas, I don't think we waste tons of it lighting building exteriors, we do waste tons of it. And it ought to be examined.

CHAIRPERSON GRIMSHAW: One other fact, and I may get shot by a utility man here, but we are probably going to lose the advantage of using the cost of energy as a tool to reduce to energy as we begin to deregulate the utilities and so forth. The cost of energy may drop in some of the more critical areas that we're working.

And I think in the future work that we do we need to worry about that. I was just in a meeting with Mark Ginsberg at DOE, and we discussed that very fact. And we're going to lose that as a tool in a lot of areas, especially if we begin to balance the cost of energy across the country.

MR. SMITH: To make a comment in that regard, I was at the energy show at Southern California Edison down in Anaheim. And I was discussing that with one of the groups there, the power brokers, so to speak, that are going to broker kilowatt hours.

And they made the comment to me that the cost is going to drop from maybe 10 to 12 cents down to like 3 cents. That's a big drop.

CHAIRPERSON GRIMSHAW: Life cycle costing is not going to be the tool it used to be.

Jack.

MR. SALES: May I make another comment, please? In an attempt to be brief I forgot a couple of things.

And it so happens that I'm a ratepayer of both SMUD and PG&E. I pay my dues. One of the things I've noted is that in my bill I've had quite a few little flyers on fluorescent lights and being energy efficient in the home. And, of course, the refrigerator issue.

But I can't remember any flyer that really had any kind of a comprehensive or even a slight discussion of outdoor lighting efficiency, what's good outdoor lighting or hardly even touching on the subject at all.

And there's been a lot of discussion here about education and educating the public. And as a member of the public I certainly say that's one thing that I have

missed.

MR. SCHWARTZ: I'll bring that back to our residential program manager as a to-do item.

Just a quick comment about losing the costs of electricity as a way to promote energy efficiency. I think in the grand scheme of things with the onset of deregulation we will see a drop in electrical pricing. However, in the near term I don't think we're looking at pricing dropping in half.

I think what we'll be seeing is more and more of the generation being more competitive. The transition and distribution, generally speaking, will remain a regulated function. And the cost associated with that will improve. But in terms of any perception that you're going to get dramatic shifts in electricity prices in California I think are kind of a misconception.

MR. MAHONE: I think the bigger danger is going to come from an accounting change. I was talking to a power planner for the Northwest Power Planning Council. And he was pointing out that a lot of the deregulation discussion involves changing the accounting so that the fixed cost of your electricity service is called out separately from the variable cost.

And if you just take a simple what-if, that if you're paying 10 cents a kilowatt hour and half of that's your fixed cost, half of that's your variable cost, what that says is if you charge separately for those two items, you save a kilowatt hour, you're not saving 10 cents any more, you're only saving 5 cents, because the fixed cost doesn't change.

So a simple accounting change can cut the cost of energy savings in half. And it's a very real danger of the way the deregulation's being discussed.

CHAIRPERSON GRIMSHAW: Anything else?

Fred?

MR. BERRYMAN: Thank you.

CHAIRPERSON GRIMSHAW: Well, thank you, Fred, for many years of good service.

[Applause.]

[Meeting adjourned at 5:20 p.m.]

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CERTIFICATE OF REPORTER

I, **A. FLYNN**, a duly commissioned Reporter of **CourtScribes**, do hereby declare and certify under penalty of perjury that I have recorded the foregoing proceedings which were held and taken at the **LIGHTING EFFICIENCY ADVISORY GROUP (LEAGue)** in Sacramento, California on the **16th day of December 1996**.

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I further certify that I am not of counsel or attorney for any of the parties to said hearing, nor in any way interested in the outcome of said hearing.

Dated this **23rd day of December 1996** at Foresthill, California.

A. FLYNN
REPORTER